The mediating effects of family resilience processes in the context of paternal incarceration: A structural-equation analysis of the Family Inequality Framework among Danish families with school-aged youth

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Abstract

Approximately 63% of all incarcerated individuals in the U.S. identify as a parent (Glaze & Maruschak, 2010), with as many as 7% of children experiencing parental incarceration at some point in their lives (Murphey & Cooper, 2015). Historically, much of the parental incarceration literature has relied on between-groups comparison research, highlighting risks and determinants of pathology for youth with an incarcerated parent. However, significantly less research has attempted to understand resilience processes in the context of parental incarceration from a within-group resilience perspective. The overall goal of this dissertation research was to empirically test the theoretical Family Inequality Framework (Arditti, 2018) and better understand how family resilience processes influence the relationship between material hardship and child outcomes within the context of parental incarceration. Structural equation modeling was used to perform a mediational cross-sectional analysis. Results of these analyses suggest that parental mental health processes play an important role in mitigating adverse outcomes for families by mediating the effects of material hardship on youth academic adjustment in the context of parental incarceration. Theoretical, clinical, and policy implications, as well as future research directions are discussed.

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General Audience Abstract

Approximately 63% of all incarcerated individuals in the U.S. identify as a parent (Glaze & Maruschak, 2010), with as many as 7% of children experiencing parental incarceration at some point in their lives (Murphey & Cooper, 2015). Historically, much of the existing research on parental incarceration is problem focused, painting these families in a negative light. In contrast, there is very little research highlighting the unique strengths and resilience of families impacted by parental incarceration. The goal of this dissertation research was to better understand how family resilience processes, such as social support, parenting practices, and parental mental health, might reduce the negative impact of parental incarceration. Results suggest that parental mental health processes play an important role for overall family wellness during parental incarceration. In particular, the more a parent says they are doing well from a mental health perspective the better their kids appear to be doing in school. In this way, parental mental health wellness appears to provide a buffering effect against the common risks parental incarceration can introduce into a family. Theoretical, clinical, and policy implications, as well as future research directions are discussed.

Dedication

I dedicate this dissertation and all of the work that coalesced into this final document to my dad, Glen Morgan. Thank you for gifting me with your passion for writing, research, criminal justice, and righting the wrongs of the world. I know you would have loved and read every word of this research. Additionally, I dedicate this to the families living the varied experiences of parental incarceration; your resilience is seen, honored, and inspiring.

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To my family, who has demonstrated resilience in the face of significant loss and trauma, my curiosity for family resilience starts with our story and shared experiences.

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To the female scholars who came before me, your trials and tribulations paved a more equitable path to higher education and participation in academia. My success is a product of the barriers you dismantled before me and I thank you. I promise to continue your important work for the next generation.

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CHAPTER I: BACKGROUND

Background and Significance

Despite having only about 5% of the world's population, the United States (U.S.) incarcerates 21% of the world's inmates (NAACP, 2018). Incarcerated individuals are overwhelmingly more likely to have experienced poverty (Ng, 2010), parental substance use, mental illness (Ritter et al., 2002), childhood trauma (Axelson, Kelleher, Chisolm, & Boch, 2020), domestic violence (Murrell, Christoff, and Henning, 2007), and general family instability (Ritter et al., 2002).

Approximately 63% of all incarcerated individuals in the U.S. identify as a parent (Glaze & Maruschak, 2010), with as many as 7% of children experiencing parental incarceration at some point in their lives (Murphey & Cooper, 2015). Since 1991, the rates of parental incarceration have increased by nearly 80% (Eddy & Poehlmann, 2010; Glaze & Maruschak, 2009; Ng, Sarri, Stoffregen, 2013). Children of incarcerated parents often face unique risk factors that their age-matched counterparts do not. Findings consistently demonstrate that children who experience parental incarceration will themselves encounter the criminal justice system, implying a systemic and intergenerational pattern of incarceration (Farrington, 2003; Murray & Farrington, 2005, 2008; Ng et al., 2013).

Children with an incarcerated parent also tend to have higher rates of mental illness (Dallaire, Zeman, & Thrash, 2015; Davis & Shlafer 2017), trauma (Arditti & Savla, 2013), antisocial and aggressive behavior (Geller, Cooper, Garfinkel, Schwartz-Soicher, & Mincy, 2012), academic challenges (Turney, 2014), poor physical health (Lee, Fang, & Luo, 2013), and externalizing behaviors that worsen over time (Kjellrand, Reinke, & Eddy, 2018).

Much of the parental incarceration literature focuses on the U.S. likely due to the disproportionate rate of incarceration relative to the rest of the industrialized world. While significantly more research is needed in the U.S., unfortunately there are limited data in the U.S examining the effects of parental incarceration, and particularly through a family process lens. Family process research broadly provides an opportunity to, "acknowledge the systemic interdependence among family members [and] the importance of the family's social placement in shaping its members' experience…" (Arditti, 2012, p. 183) and is crucial to better understanding the effects of parental incarceration on the family as a whole. An important first step in this area is utilizing existing and available data from other countries that may inform future research in the U.S. As such, the present study examined Danish national data provided as part of an international consortium of parental incarceration researchers. Consequently, this study contributes a family process perspective of parental incarceration from a global lens. Although these findings are not entirely generalizable to the U.S. incarceration practices and trends, the present study does not examine predictors and outcomes of incarceration. Rather, the intent is for these findings to inform our understanding of family resilience processes in general, with global implications for future research on family resilience. The Danish carceral context is described in forthcoming sections of this paper to situate the findings in context.

Rationale

Historically, much of the parental incarceration literature has highlighted risks and determinants of pathology for youth with an incarcerated parent. Based on the extant literature, we can reasonably conclude that parental incarceration overwhelmingly produces increased risks for youth and families (Wakefield & Wildeman, 2014). However, significantly less research has attempted to understand resilience processes in the context of parental incarceration. Advancing

this line of research is imperative to our understanding of how youth and families may fare well, or even excel, in the context of parental incarceration. Resilience research findings have the potential to inform intervention programs just as much, or potentially more, than pathology-based research of youth in parental incarceration. Further, existing literature in this area largely employs between-group analyses, potentially missing unique within-group attributes of families experiencing parental incarceration (Arditti & Johnson, under review; Poehlmann-Tynan & Arditti, 2018). Consequently, the present study was a within-group analysis developed with a resilience-based perspective and guided by extant theory conceptualizing stress and resilience.

Informed by Family Stress and Resilience Theory (Hill, 1949; Patterson, 1988; 2002) and the Family Stress Proximal Process Model (FSPPM; Arditti, 2016), the Family Inequality Framework (Arditti, 2018) was developed as a theoretical model to understand the key stress and resilience mechanisms that demonstrate an important role in youth adjustment outcomes during parental incarceration. Parental incarceration (Arditti, 2016) is conceptualized as an ongoing stressor for children and families that directly affects youth adjustment by potentially interfering with critical family processes (i.e., social support and parenting characteristics) important to youth outcomes (Arditti, 2018)

The Family Inequality Framework (Arditti, 2018) extends these ideas by incorporating material hardship as a key mechanism of effect in terms of how parental incarceration impacts children. The Family Inequality Framework (Arditti 2018) also includes protective factors, such as social support and caregiver characteristics, to conceptualize the role of resilience processes in parental incarceration. The risks and effects of parental incarceration have been consistently tested and documented. However, it is less known the degree to which certain family processes represented in the Family Inequality Framework (i.e., social support and caregiver

characteristics) promote family resilience and positive youth adjustment during parental incarceration (Arditti, 2012).

Purpose of the Study and Research Questions

The overall goal of this dissertation research was to empirically test the theoretical Family Inequality Framework (Arditti, 2018) and better understand how family resilience processes influence the relationship between material hardship and child outcomes within the context of parental incarceration. Specifically, the present study represents the "next wave" of research examining the intersections of poverty, parental incarceration, and child and family wellbeing by specifically considering under what conditions resilience mechanisms may emerge within contexts of adversity and their role in promoting positive developmental trajectories for children (Arditti, 2017; Poehlmann, 2005; 2010; Poehlmann-Tynan, 2015). Specifically, this research capitalized on existing international data that map onto the Family Inequality Framework (Arditti, 2018) due to its assessment of key family resilience processes and parental incarceration scenarios, and particular aspects of child well-being in order to yield a test of how family resilience mechanisms operate within contexts of economic hardship and child school adjustment. Findings from this study can further refine the Family Inequality Framework (Arditti, 2018) as well as yield important practical implications for families experiencing material hardship and parental incarceration.

Until now, an overall lack of family process perspectives in quantitative data and methodological challenges have prevented empirical testing of the Family Inequality Framework (Arditti, 2018) and more broadly, the role of family resilience processes such as social support and parenting behavior in mediating stressful conditions that predate and surround parental incarceration. Specifically, incarcerated persons and their families are challenging to access for

data collection as a result of historical exploitation and administrative barriers (Cislo & Trestman, 2013; Reagan & Shelton, 2016; Ward & Willis, 2010). The present study employed a structural equation model (SEM) analysis with data collected from 727 caregivers in Denmark with a child (aged 11-17) who experienced paternal incarceration. These data were particularly attractive given the inclusion of measures related to parenting and family processes.

Informed by the Family Inequality Framework (Arditti, 2018), the analytical structural model included the following variables: material hardship (exogenous), mediating resilience processes (i.e., caregiver mental health, parenting quality, and social support for the non-incarcerated parent) and youth school adjustment outcomes (endogenous), findings of which have historically been mixed (Cho, 2009, 2011; Dallaire, Ciccone, & Wilson, 2010). Academic adjustment during parental incarceration was specifically chosen as the outcome variable for a few reasons. First, academic performance is an important indicator of overall child development outcomes as it incorporates assessment across social and learning domains. Second, assessing a child developmental outcome, as well as including risk and resilience variables, is imperative in properly conducting resilience research from a family process perspective (Luthar & Cushing, 1999; Poehlmann-Tynan & Arditti, 2018). Finally, academic adjustment and performance may serve as an important developmental indicator of well-being later in life (Turney & Goodsell, 2018).

Examining the effects of family processes within the Family Inequality Framework (Arditti, 2018) further informs our understanding of how parental incarceration affects child outcomes, examines the degree to which family resilience processes mediate outcomes, and can inform prevention and intervention development (Arditti, 2015). The present study is important and timely given that more than half of incarcerated people are parents, and there is currently a

dearth of research investigating family effects of material hardship on child outcomes in the context of parental incarceration. Further, although there is a plethora of risk and pathology based parental incarceration research, as well as between-groups research, little empirical focus has been given to within-group family resilience processes of families with an incarcerated parent. In light of historical common methodological challenges with parental incarceration research, this study presented a unique opportunity to conduct complex statistical analysis with a large data set investigating paternal incarceration from a family process perspective.

Present Study

This study conducted multivariate analysis of 727 caregivers of children (aged 11 to 17 years) with an incarcerated father. This study utilized Danish national data (caregiver-answered surveys) that explored the relationships between material hardship, parenting skills and parental mental health, and social support on childhood school adjustment during parental incarceration. The present research was designed to examine the relationship between material hardship and youth academic adjustment. Specifically, this study sought to examine how material hardship explains variation in Danish youth's academic adjustment and the extent to which family resilience processes (i.e., social support, parental mental health, and parenting quality) mediates this influence in families reporting paternal incarceration. Findings from this research can have profound implications for early child and family interventions that mitigate the adverse effects of parental incarceration, enhance resiliency, and interrupt intergenerational patterns of inequality. Research questions in the present study are the following: (1) Is material hardship associated with childhood school adjustment in the context of parental incarceration? and (2) To what degree, if at all, do family resilience processes mediate (either partially or strongly) the relationship between material hardship and youth academic adjustment.

CHAPTER II: REVIEW OF THE LITERATURE

Theoretical Guidance

Family stress and resilience theory (Hill, 1949; Patterson, 1988; 2002) is a particularly relevant and helpful lens that can be applied to examining broadly how material hardship impacts child development (Conger, Conger, & Martin, 2010), and more specifically how the experience of parental incarceration may influence the connection between economic distress and child and family outcomes (Arditti, 2012, 2016, 2018; Poehlmann-Tynan & Arditti, 2018; Wakefield & Wildeman, 2014). In family science, the family is conceptualized as a system of interconnected individuals that promote growth when adapting to changes in a developmentally typically manner. The family can often be a primary resource during times of adversity (Allen & Henderson, 2017; Patterson, 1988; 2002). Integrating our understanding of stress and resilience processes provides a more complete picture of how families encounter adversity (Allen & Henderson, 2017).

Family Stress Theory

The original Family Stress Theory was developed by Hill (1949) and later called the ABCX model (Allen & Henderson, 2017). Hill (1949) asserted that stressors (A), existing economic or psychosocial resources (B), and the family's perception of stressors (C) interact to predict the probability of a crisis (X). When a family is presented with a significant stressful life event that has potential to disrupt typical family functioning (e.g., parental incarceration), the family's perception of their ability to overcome the stressor is informed by their existing resources. If the family deems the stressor insurmountable, and existing resources do not

mitigate the stressor, the family may fail to restore stability and a crisis (e.g., poor child and family outcomes, etc.) may occur.

McCubbin and Patterson (1983) expanded on Hill's (1949) model with the double ABCX model. New stressors (aA) including prior strains (e.g., material hardship) from the crisis may "pile-up"; exacerbating the effects of the original crisis. The family will then respond by seeking new resources (bB), to incorporate into existing resources, in order to overcome the crisis. After the inclusion of new demands (aA) and resources (or lack thereof) (bB), the crisis will form a new meaning (cC) that will take into account all resources, strains, and estimates of what needs to be done to restore stability within the family. Following a new balance, a post-crisis adjustment period will follow (xX) which ranges from good adaption (bonadaptation) to poor adjustment (maladaptation) (McCubbin & Patterson, 1983).

Family Stress Theory was the theoretical foundation that situates the variables in the present study's analytic model. Specifically, material hardship was seen as a contextual antecedent stressor "aA", while "bB" and "cC" represent the family processes of applying resources and developing shared meanings regarding the experiences. The adjustment period, "xX" represented the child outcomes (i.e., youth academic adjustment) that are dependent on "aA" and through "bB" and "cC" processes. According to Family Stress Theory, "xX" is not only directly dependent on "aA", but indirectly influenced through the degree of "bB" and "cC" processes. Said differently, contextual stress such as material hardship affects child outcomes both directly and as a function of mediating proximal family processes such as parenting and social support.

Conger et al. (1990; 2010) expanded on this work by proposing that economic and material hardship are profoundly influential contextual stressors that affect families ("xX")

directly through poverty experiences and indirectly through the strain that economic hardship places on family members and family relationships. These proposed processes situate contextual stress ("aA") as a predictor of family functioning, and family processes ("bB" and "cC") as mediating the effects of material hardship on child and family outcomes ("xX"). Conger's work and the specific role of economic and material hardship in family stress and resilience processes is elaborated on in subsequent sections.

Expanding the double ABCX model, Patterson (1988) proposed the Family Adjustment and Adaptation Response (FAAR) model to explain the process by which families adjust (ABCX) during times of minor change and adapt (aAbBcCxX) following a crisis. More specifically, the adjustment phase is marked by minor fluctuations in which the family is relatively stable (Patterson, 1988; 2002). Conversely, the adaptation phase begins after a crisis occurs, in which a destabilizing event occurs, and the family's capabilities are unable to meet the demands of the situation (Patterson, 1988; 2002). Adaptation is a phase in which the family attempts to restore homeostasis across the individual, family, and community (Patterson, 1988). Patterson's (1988) FAAR model contributes to Family Stress Theory an understanding of the process by which families navigate and adapt to adversity. The FAAR model serves as a turning point in Family Stress Theory by introducing the idea of family resilience as an adaptational response to family adversity. Specifically, this model is critical to situating family outcomes as a result of contextual stressors through family resilience processes.

Family Resilience Processes

Resilience is a concept that has historically been applied differently based on discipline (Patterson, 2002). For example, epidemiology has examined "host resistance" as a resilient response to a person who did not become ill when introduced to a pathogen that would generally

foster illness (Cassel, 1976; Patterson, 2002). Simultaneously, sociology coined "salutogenesis" to describe Holocaust survivors who appeared to adjust well following the atrocities of World War II (Antonovsky, 1987; Patterson, 2002). In psychology, resilience was used to describe children who were high functioning in circumstances where pathology was likely (Patterson, 2002).

Resilience scholars have differentiated between individual and family resilience. The interdisciplinary examples of resilience exemplify the concept of individual resilience, which can generally be understood as higher than expected functioning following risk event(s). Patterson (2002) posits that family resilience can best be understood from the FAAR model emphasizing family processes (i.e., relationships, parenting, social support, etc.) and shared meanings that promote positive outcomes following risk experiences that would normally foster poor outcomes. Resilience scholar Froma Walsh (2016) similarly defines family resilience as, "the capacity to withstand and rebound from disruptive life challenges… it involves dynamic processes fostering positive adaptation in the context of significant adversity. Beyond coping, these strengths and resources enable recovery and positive growth from serious life challenges" (p. 313). Walsh's (2016) definition of family resilience is congruent with Patterson's (2002) FAAR model, in which coping, and resources, are seen as the mediating force enabling families to navigate and overcome family adversity.

To assess the degree of family system resilience, Patterson (2002) stated that the empirical method must involve at least two family members, with a specific focus on family relationships (i.e., linkages and processes between family members). Masten and Coatsworth (1998) provided further family resilience research criteria: (1) the presence of a contextual risk (e.g., material hardship) that we would expect to cause family crisis and (2) a need to understand

protective processes that prevent otherwise expected poor outcomes. Empirical research has clearly documented how the adversities for children with a parent in prison stem from intensified economic hardship and consequent family difficulties. More recently, Arditti (2017) extended these ideas by highlighting how significantly less is known about resilience processes that may exist within families affected by a parent's incarceration, along with how these mechanisms may promote positive child outcomes despite material hardship. This may be, in part, due to the lack of within-group resilience research, which may be better suited to identify specific resilience processes than the usual comparative between-groups research that dominates the literature.

The concept of resilience has historically been understood as a positive outcome in the context of adversity when some degree of a negative outcome was otherwise expected (Masten, 1994; 2007; 2009; Patterson, 2002). More recently, Patterson (2002) expanded on this view proposing that family resilience is the process by which families achieve their bonadaptation outcome through the interactions of on-going demands and capabilities. This is contrasted with family resiliency which is understood as a capacity or collective trait in managing crises (Patterson, 2002; Poehlmann-Tynan & Arditti, 2018). The primary difference in understanding family resilience versus resiliency is the emphasis of iterative family processes in achieving adaptation in the former versus a static trait or characteristic in the latter. The Family Adjustment and Adaptation Model (FAAR; Patterson, 1988) is a cornerstone for understanding family resilience as the family's adaptation is a process-oriented outcome.

For an operational understanding of resilience, I adopted Pauline Boss' (2006) definition of resilience as the process by which a family may, "…bounce back to a level of functioning equal to or greater than before the crisis… it means rising above the traumatic and ambiguous losses by not letting them immobilize and living well despite them" (p. 27, 48). Boss' (2006)

view of resilience is congruent with Family Stress Theory as adversity is a prerequisite to resilience and psychosocial resources are considered in the context of a family process. In the present study, these resources were parenting quality (i.e., positive parenting), parental mental health, and social support. These protective resources were conceptualized as resilience processes that influence child outcomes in the context of paternal incarceration as an adverse risk-based family experience (Foster & Hagan, 2015). Masten (2001) suggested that assessing developmental competence in child outcomes (i.e., school adjustment) is a useful outcome element in family resilience research, as it provides measurable information relative to the family resilience processes.

Masten's (2014) work on assessing resilience in research has provided useful categories of factors demonstrating resilience across a number of studies. These categories include child factors (e.g., temperament), family characteristics (e.g., parenting skills, parental mental health, and material hardship), community characteristics (e.g., social support) and sociocultural factors (e.g, policies and practices impacting parental incarceration). Research including these domains is consistent with the family process perspective approach to research, in which parental incarceration is conceptualized across systems (i.e., individual, family, community) from an interdisciplinary perspective (i.e., sociology, psychology, economics, public policy, etc.) (Poehlmann-Tynan & Arditti, 2018).

These proposed resilience process domains are consistent with concepts in iterations of Family Stress and Resilience Theory. Consequently, the present study included resilience processes across Masten's (2014) four domains of assessing resilience in families. Finally, the present study utilized a variable-centered approach (Masten, 2001; Poehlmann-Tynan & Arditti, 2018) which situated resilience processes across mediating variables (social support, parenting

quality, and parental mental health in the present study) and used multivariate analyses (also in the present study) to examine relationships among risks, protective factors, and child outcomes thorough assessment of resilience processes (Poehlmann-Tynan & Arditti, 2018).

Together, the main concepts of family stress and resilience help provide a "whole picture" of how families navigate risks that lead to a crisis (Allen & Henderson, 2017). Family stress and resilience theory (i.e., FAAR and Masten's work on resilience research) also provide a clear map for conducting within-group family resilience research and strongly informed the conceptualization and assessment of resilience processes in the present study.

Role of Economic Hardship

Within Family Stress Theory (Hill, 1949) and later iterations (Patterson, 1988; 2002; Arditti, 2016; 2018), stressors are commonly described as events. Recent literature emphasizes the importance of considering economic hardship and socio-economic status in situating family stress. Conger and colleagues have written extensively on the role of economic hardship in family processes (Conger et al., 1990; Conger et al., 2010; Masarik & Conger, 2017). Parallel to health disparity literature, Conger et al. (2010) proposed that economic hardship acts as a primer and antecedent for risk factors in family relationships. Consequently, economic hardship in the present study was situated as a predictor variable that directly affects family processes and youth outcomes in the context of parental incarceration. Further, this conceptualization is consistent with Family Stress Theory in which economic hardship ("aA") interacts with family resilience processes ("bB" and "cC") to predict youth outcomes ("xX").

Conger's early work hypothesized that economic hardship resulted in strain on marital relationships (Conger et al., 2001). Cross-cultural research has consistently identified high economic pressure as a predictor of marital instability and emotional distress (Conger & Conger,

2002; Conger et al., 2010). Based on these findings, Conger et al. (2010) developed a model to explain this phenomenon. Specifically, economic hardship (i.e., low income, high debt-to-income ratio, etc.) is hypothesized to lead to economic pressure (e.g., inability to pay bills, unmet needs, etc.) which results in couple/family emotional distress and behavioral conflict, ultimately leading to a decline in marital quality and stability (Conger et al., 2010). This process maps well onto Family Stress Theory in which economic pressure ("aA") results in poor family outcomes "xX" via fractured relational processes ("bB" and "cC"). Conger and colleagues (2010) highlight the possibility of this process acting in a recursive manner, similar to the Double ABCx model, in which economic hardship strains family relationships, and in turn diminishes the ability to manage economic hardship.

Additional research has demonstrated how economic hardship may have similar effects on child development in that economic strain acts as a predictor of child social, emotional, and behavioral functioning (Conger et al., 2010). This idea is corroborated by research demonstrating that declines and improvements in family income lead to worsening and beneficial effects, respectively (Conger et al., 2010). While the direct explanatory mechanisms of this process have not clearly been identified, this is logical as it would make sense that economic hardship and subsequent marital instability would likely have spill-over effects on children (Conger et al., 2010). Conversely, and consistent with Family Stress Theory, families not experiencing economic hardship, or at least to a lesser degree, would likely have the financial and social resources to better mitigate stressors.

Perhaps most critical is the idea that effects of economic hardship are transmitted through parental experiences rather than economic hardship having a direct effect on child development (Conger et al., 2010). This notion suggested that parental responses and coping, or lack thereof,

act as a mediator of economic hardship on child development and adjustment. Early research and iterations of the model focus on marital relationships and two-parent households. However, Conger et al. (2010) emphasized that this model of understanding economic hardship is also relevant to single-parent households, if not more so, as we would expect a single parent to experience high burden and stress during times of economic hardship.

Conger's work on economic hardship was an important integration into family stress and resilience theory. Not only does it help specifically illustrate what "demands" may look like in family stress processes, it also highlights how demands can lead to on-going crises and mediate outcomes through family/relational stress processes. I specifically chose to expand on the concepts of parenting resilience processes and economic hardship as they strengthen and clarify Family Stress Theory concepts that guided the present study. Using these concepts as a foundation for understanding family problems, the remainder of this section provides an overview of the literature and justification for the importance of this study's inquiry.

Literature Review

Parental Incarceration

For the past ten years the U.S. has maintained a higher incarceration rate than any other country in the world (Wakefield & Wildeman, 2014; Western, 2006). The number of incarcerated persons has increased approximately 500% over the past four decades (King, Mauer, & Young, 2005). This is an alarming statistic considering the population grew by just 40%, and the U.S. saw an overall decline in crime rates, during that same time period (King et al., 2005). These trends are problematic as they highlight carceral practices that are incommensurate with crime rates, potentially indicating flawed criminal justice policies. Together, these trends account for the occurrence of "mass incarceration" that the U.S. is

currently experiencing (Foster & Hagan, 2009; Garland, 2001). These trends are often difficult to track, as numbers are not always specified to a jail or prison setting. Further, jail settings frequently have high rates of turnover or "churn" as some await progression of their charges (Sawyer & Wagner, 2019). A recent report indicated that while nearly 600,000 individuals enter prison settings each year, people go to jail about 10.6 million times per year (Sawyer & Wagner, 2019). The high turnover rates of individuals in jail make it difficult to track demographic information.

In addition to the sheer increase in volume of inmates during this period of mass incarceration is the widening racial disparities represented in jails and prisons. While demographics vary greatly by state as well incarceration setting (i.e., jail vs. prison), racial disparities in incarceration are well documented (Nellis, 2016). Most recent statistics show that African Americans are incarcerated in state prisons more than five times the rates of Whites, and in some states this ratio increases ten-to-one (Nellis, 2016). Latinos are imprisoned approximately 1.4 times higher than Whites with significantly higher ratios in the Northeast (Nellis, 2016). Finally, in eleven states at least one in twenty African Americans overall are incarcerated (Nellis, 2016). These incarceration demographics tend to be further exacerbated in disadvantaged and low socio-economic status neighborhoods (Clear, 2007; Wakefield & Wildeman, 2014). These are just a few of many statistics that demonstrate the magnitude of racial disparities in the criminal justice system, and illustrate the intersectionality involved in mass incarceration.

Mass incarceration is a phenomenon that has consequences for families and children (Arditti, 2012; Hagan & Dinovitzer, 1999). A special report published by the Department of Justice reported that parental incarceration increased by nearly 80% from 1991 to 2007 (Glaze &

Maruschak, 2010). More than half of incarcerated persons identify as a parent of at least one minor child, representing approximately 52% of state inmates and 63% of federal inmates (Glaze & Maruschak, 2010). Together these incarcerated parents have 1.7 million children in the U.S. , which represents about 2.3% of all children under the age of 18 in the U.S. (Glaze & Maruschak, 2010). Newer research indicates that more than 5 million children in the U.S. have had at least one parent incarcerated in prison settings at one point in their lives, a rate nearly three times higher than previous estimates examining the rates of children with a currently incarcerated parent at the time of data collection (Murphey & Cooper, 2015). While exact rates are not well documented, the high rate of parental incarceration has been linked to a subsequent increase in single parent households (Western, Loopoo, & McLanahan, 2004) and has profound implications for the caregivers left behind by the incarcerated parent (Arditti, 2012). The non-incarcerated parent may experience psychological and financial distress, role strain as a single parent, and overall family instability (Arditti, 2012; Geller, Garfinkel, & Western, 2011; Wildeman, 2014). Subsequently, negative child and family outcomes may be a function of parent and family level processes during parental incarceration.

The rates of parental incarceration are relatively similar across child age ranges. A 2004 survey completed by parents incarcerated in state prisons demonstrated that approximately 22% had child(ren) aged 4 or younger while 30% of affected children ranged between 5 and 9 years old (Glaze & Maruschak, 2010; Poehlmann-Tynan & Arditti, 2018). Further, 32% of children ranged between 10 and 14 years old while the remainder (16%) ranged between 15 and 17 years old (Glaze & Maruschak, 2010; Poehlmann-Tynan & Arditti, 2018).

The Danish Context

The U.S. has among the most detrimental incarceration trends and outcomes among western industrialized nations. In Denmark, conversely, rates of serious criminal activity and convictions are significantly lower than in the U.S. (Wildeman & Andersen (2017). For example, the homicide rate in the U.S. (3.8 per 100,000) is 54 times higher than that of Denmark (0.7 per 100,000) (Wildeman & Andersen, 2017). However, rates of "less serious crimes" do not vary greatly between these two countries (Wildeman & Andersen, 2017).

Crime rates and trends are only part of the whole incarceration picture. The justice systems between Denmark and the U.S. are distinct in six important ways, as outlined by Wildeman and Andersen (2017), that contribute to our understanding of how these countries differ. First, Denmark generally has harsher sentences than the U.S. for serious traffic violations, including driving under the influence of substances (Wildeman & Andersen, 2017). Additionally, for those sentenced to serve time (more common in the U.S. than Denmark) jail or prison sentences are generally much shorter in Denmark (Wildeman & Andersen, 2017). Third, individuals incarcerated in Denmark are eligible for parole after two-thirds of their sentence has been served whereas U.S. incarcerated persons tend to serve higher proportions of their respective sentences (Wildeman & Andersen, 2017).

Further, when compared to the U.S., the Danish criminal justice system uses non-custodial alternatives to traditional incarceration such as community service and electronic monitoring, at much higher rates (Wildeman & Andersen, 2017). Fifth, and perhaps most notably, when Danish individuals are sentenced to prison the prison settings themselves are considered "open", in which incarcerated persons are able to leave for approved skill and growth promoting opportunities such as employment and work. At present, the U.S. does not have a

comparable prison setting. Finally, the U.S. practice of incarcerating people in local jails (i.e., more likely to be closer to home) for shorter sentences does not occur in Denmark. Indeed, incarcerated persons with short sentences may serve time in carceral settings that are very far from home (Wildeman & Andersen, 2017).

Scholars suggest that despite differences in both criminality and welfare resources, it is unclear the degree to which carceral research is generalizable from the Denmark to the U.S. and vice versa (Wildeman & Andersen, 2017). In fact, parental incarceration research outcomes (i.e., foster care placement and youth well-being) have been quite consistent across transnational criminal justice contexts, including the U.S. and Denmark (Wildeman & Andersen, 2017). Given that the present study is not examining predictors or outcomes of incarceration, but rather resilience processes, it can be argued that these findings may inform our understanding of family resilience processes in general despite the transnational differences. Indeed, parental incarceration scholars state that a Danish study examining processes present during parental incarceration can provide important insights that are relevant and applicable to the U.S. context (Wildeman & Andersen, 2017).

Family Perspective

Parental incarceration trends, considered in the larger context of mass incarceration, are influencing social and family scientists to better understand how parental incarceration affects families (Arditti, 2016; Foster & Hagan, 2009; Western & Smith, 2018). Family scientists are well-suited for this line of empirical inquiry through the use of a family process perspective, which is an interdisciplinary (i.e., criminal justice, sociology, economics, psychology, human development, etc.,) conceptualization of parental incarceration across family, community, and socio-political contexts (Arditti, 2012; Poehlmann-Tynan & Arditti, 2018). A family process

perspective is crucial to understanding the phenomenon of material hardship within parental incarceration, and the family's response, from a family process and sociopolitical viewpoint (Poehlmann-Tynan & Arditti, 2018).

Using a family process perspective, the remainder of this chapter presents the most current literature on risk and resilience in families experiencing parental incarceration. The sensitizing concepts in the proceeding literature review are organized and informed by the Family Inequality Framework (Arditti, 2018). The Family Inequality Framework (Arditti, 2018) is derived from the earlier Family Stress Proximal Process Model (FSPPM) (Arditti, 2016) and as such an overview of the FSPPM is provided as a foundation for understanding the subsequent Family Inequality Framework (Arditti, 2018). Following an overview of these guiding frameworks, a review of the literature will be discussed in topical order of the present study's analytic model.

Family Stress Proximal Process Model

There is a growing body of evidence pointing to the risks that parental incarceration poses for children and families (Arditti, 2012; 2016). However, the process by which these risks lead to outcomes related to family wellbeing and social equity is less known (Arditti, 2016). Rooted in ecological and family stress theories, the Family Stress Proximal Process Model (FSPP model; Arditti, 2016) is a framework that helps theorize how family meanings, parental functioning, and parent-child contact are critical processes during parental incarceration.

In the FSPP model, parental incarceration is understood to be a continuous stressor that is simultaneously a product of cumulative disadvantage as well as an on-going perpetuator of family stress and social inequality (Arditti, 2016). Drawing from Family Stress Theory, parental incarceration can be understood as the crisis that occurs from a pile-up of contextual economic

disadvantage and demands that outweighs the available family resources. Incarceration can further exacerbate social inequality and economic disadvantage through loss of income and limiting future employment opportunities for the incarcerated (Noyes, Paul, & Berger, 2018; Western, 2006). Further, families frequently bear the financial burden by financing incarceration and the secondary consequences (i.e., contact and visiting experiences) associated (Wildeman, 2014).

Within the FSPP model, it is hypothesized that parental incarceration leads to both parenting stress of the non-incarcerated parent as well as ambiguous loss for the family (Arditti, 2016). Ambiguous loss (i.e., when a person is psychologically present but physically absent) (Boss, 1999) perfectly captures the experience of a family member who is still part of the family but absent due to incarceration. According to the FSPP model, the effects that parental stress and ambiguous loss have on child adjustment are dependent on both the quality of caregiver parenting of the non-incarcerated parent, as well as child contact and visiting experiences with the incarcerated parent (Arditti, 2016). Youth coping and family social support are considered in the FSPP model and understood to promote resilience and positive outcomes (Arditti, 2016).

The FSPP model is especially important in understanding material hardship within the context of parental incarceration as there is a primary focus on parental separation as an on-going stressor that further exacerbates material hardship and interrupts critical proximal processes understood to influence child development (Arditti, 2016; Poehlmann, 2005; 2010). Focusing on proximal processes allows researchers to potentially identify the underlying mechanisms that explain why, and to what degree, parental incarceration exacerbates material hardship and affects child well-being. While the FSPP model has been theoretically corroborated, scholars are just now beginning to test its ability to explain variation in child outcomes. Arditti and Savla (2013)

tested a precursor of the FSPP model in which visitation difficulties were found to mediate the effects of parental incarceration on childhood trauma. A further test of the FSPP model by Besemer & Dennison (2018b) found that parenting stress indeed served a mediating role in family processes. These findings point to the potential mediating role of family relational continuity, with a particular focus on stress, in child outcomes during parental incarceration.

Family Inequality Framework

It is well documented that mass incarceration has overwhelmingly impacted racial and ethnic minorities; contributing to widening gaps in equity across race, class, and the labor market (Nellis, 2016; Wakefield & Wildeman, 2014). In the human development and criminal justice literature, incarceration is understood to be both a byproduct of and contributor to cycles of poverty, racial injustice, and family inequality (Arditti, 2016; Wakefield & Wildeman, 2014). Consequently, incarceration may limit the economic opportunities available to those who encounter the criminal justice system. This especially may be the case for minorities and their families.

Expanding on the Family Stress Proximal Process Model (Arditti, 2016), the Family Inequality Framework (Arditti, 2018) proposes that the effects of parental incarceration extend beyond limiting economic opportunities and contribute to social inequality for the incarcerated and their families. Specifically, the Family Inequality Framework (Arditti, 2018) recognizes that in addition to economic hardship, parental incarceration limits the opportunity for families to maintain healthy, stable, and rewarding family experiences, ultimately contributing to child and family inequality outcomes. Family difficulties (e.g., relational and psychosocial) may be a function of material hardship that are exacerbated by difficulties the parent at home experiences

(Arditti, 2018). In turn, these effects may yield negative child and family outcomes, further crystallizing inequality in families experiencing parental incarceration.

Incarceration inherently prevents individuals from fulfilling family roles such as parent and partner, and is likely to exacerbate material hardship, as it is unlikely that incarcerated parents can invest in their children financially (e.g., child support) or relationally (e.g., parent-child relationship) (Foster & Hagan, 2015; Turanovic, Rodriguez, & Pratt, 2012). These effects may pose risks to children both directly (e.g., loss of parent, family instability) and indirectly (e.g., worsened economic hardship, poor parenting as a result of role strain). This is especially true when individuals are incarcerated long distances from their families, which is often the case (Arditti, 2018; Arditti & Kennington, 2017).

Fulfilling family roles while incarcerated may only slightly improve during family reentry as individuals may experience "invisible punishments" (Arditti, 2018, p. 2; Travis, 2002). Invisible punishments are post-incarceration experiences in which individuals are precluded from opportunities and practices that may enhance parenting, such as employment opportunities and public resources (i.e., certain welfare benefits). These exclusionary practices not only continue to punish formerly incarcerated individuals after fulfilling their sentence but extends potentially deleterious consequences onto the families of incarcerated persons (Arditti, 2018, Muentner et al., 2019; Turney, 2017).

It is important to conceptualize incarceration as a contributor to not just individual social exclusion, but to family exclusion as well, to understand the whole picture of incarceration and families (Foster & Hagan, 2015; Saunders, 2018). This phenomenon maps well onto Family Stress Theory as it highlights the potential for incarceration of one person to upend family stability and their process of adjustment and adaptation. Said differently, incarceration may be

more than a crisis that a family will experience together. Rather, family exclusion may have profound implications for how families create shared meanings and leverage resources to navigate the demands and stressors of material hardship during and after parental incarceration (Foster & Hagan, 2007; 2015).

The Family Inequality Framework (Arditti, 2018) has not yet been empirically tested but is well suited to guide empirical inquiry in the much-needed research area of family resilience processes in mitigating the effects of material hardship (Poehlmann-Tynan & Arditti, 2018). Rigorous empirical testing may advance the model and inform practical applications for families experiencing parental incarceration. The remainder of this section focuses on the extant literature of concepts within the Family Inequality Framework (Arditti, 2018), as well as the justification for empirically testing these concepts using the present study's analytic model (Figure 1).

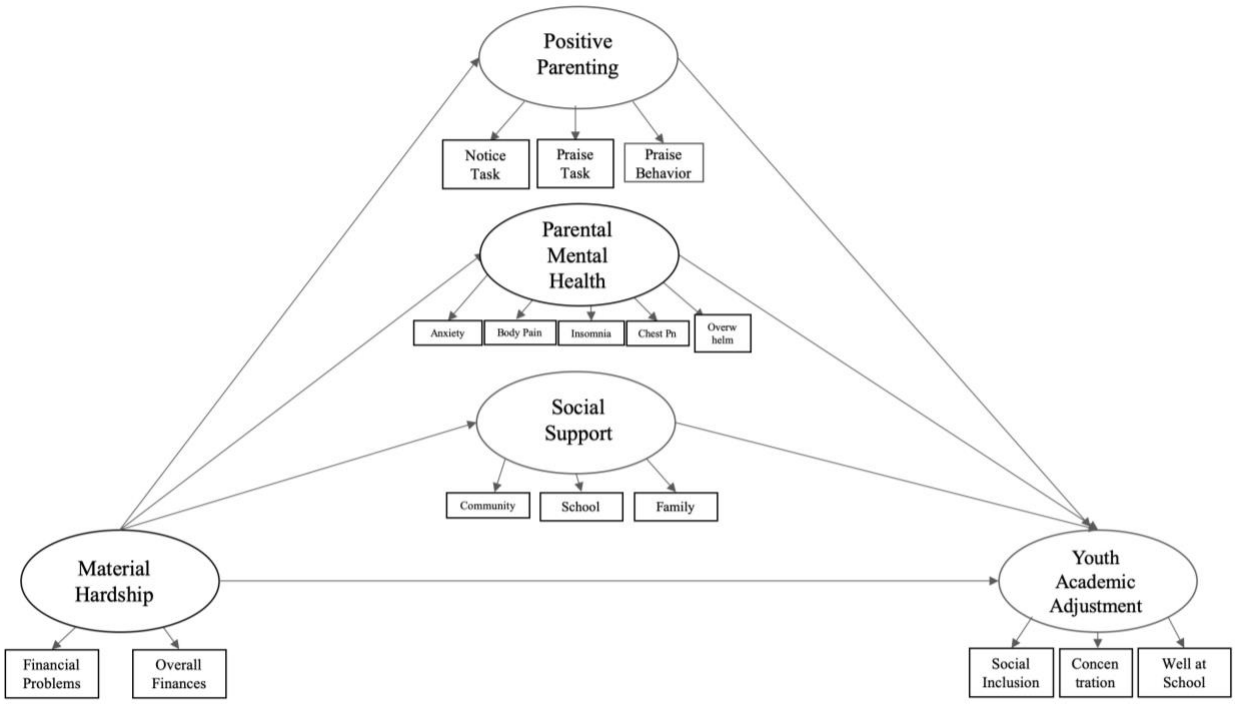

Figure 1. Hypothesized Structural Equation Analytical Model

Material Hardship

Financial Problems. Incarcerated persons are more likely to have experienced poverty and reside in low socio-economic status neighborhoods (Ng, 2010; Ng et al., 2013). These individuals are also significantly more likely to encounter economic hardship as a direct result of low-wage positions (Noyes et al., 2018; Wakefield & Uggen, 2010). These findings suggest that individuals, and by extension their families, are likely already struggling financially prior to incarceration. Financial hardship can be exacerbated by incarceration through loss of income, legal fees, and/or barriers to re-entering the labor market with a criminal record (Geller et al., 2011; Holzer, 2009; Noyes et al., 2018).

The negative trajectory of income commonly associated with carceral experiences are likely to have profound implications for children experiencing parental incarceration. Geller and colleagues (2011) report that children of incarcerated parents are significantly less likely to have financial support (e.g., child support and general financial assistance) than children who have not experienced parental incarceration. Further, when financial assistance is available, children of incarcerated parents tend to receive less overall than children without incarcerated parents (Geller et al., 2010; Noyes et al., 2018).

A recent qualitative study that interviewed fourteen children of incarcerated parents found that all but one of the families were financially struggling prior to incarceration (Wakefield & Wildeman, 2014). Further, the family that reported financial stability also reported generating income by illegal means (Wakefield & Wildeman, 2014). An additional important finding from this study was that the children from every family interviewed appeared (or reported) to be acutely aware of the family's financial struggles (Wakefield & Wildeman, 2014).

Paternal incarceration is still most common, however maternal incarceration is increasing at nearly double the rate (131%) than paternal incarceration (77%) (Bretherton, 2010; Glaze & Maruschak, 2010). This trend is significant as there tend to be marked differences in custody and primary care taking depending on the gender of the incarcerated parent. In paternal incarceration, 88% of children continue to reside with their mothers (Bretherton, 2010). Conversely, the majority of children experiencing maternal incarceration are placed with non-parental caregivers or in foster care with only 20% of fathers continuing to care for their children (Makariev & Shaver, 2010). Most important among these statistics is that more than half of incarcerated parents (52% of mothers and 54% of fathers) endorsed the role of primary financial provider for children before being incarcerated (Glaze & Maruschak, 2010; Noyes et al., 2018).

Children with an incarcerated parent may experience the deleterious effects of economic hardship in multiple ways. First, a loss of income may significantly limit the family resources and introduce a higher level of distress for other family members, especially primary caregivers. This inherently limits a parent's ability to invest in their children during incarceration. In cases of an incarcerated parent who was providing child support, it is highly unlikely that financial assistance will continue and even more unlikely that the funds will be recouped following incarceration (Arditti, 2018; Muentner et al., 2019; Wildeman, 2014). In addition to financial losses, families may experience new costs associated with incarceration such as legal fees, fines, or other costs associated with incarceration and visiting the incarcerated person (Arditti, 2018; Wildeman & Wang, 2017).

These financial burdens exacerbate economic hardship and further promote inequality across families involved in the criminal justice system (Arditti, 2018). These experiences are commonly the rule, not the exception, and help explain how incarceration contributes to cycles

of poverty and material hardship. Examining financial hardship phenomena through a Family Inequality Framework lens allows us to conceptualize the potential ripple effects. First, children are commonly directly affected through loss of family financial resources as well as indirectly through the non-incarcerated parents additional stress and role strain. Based on these economic hardship trends, it is not surprising that children who have experienced parental incarceration are also significantly more likely to live in severe poverty than children who have not experienced parental incarceration (Johnson & Waldfogel, 2002; Noyes et al., 2018). Financial instability and general poverty are generally linked with poor childhood health and well-being outcomes (Noyes et al., 2018). These trends are pieces of the whole picture that make up material hardship, which position children with an incarcerated parent at a severe disadvantage and promote family inequality. The Family Inequality Framework indicates possible protective factors (e.g., family and social welfare support) that may buffer the effects of family financial problems and contribute to resilience processes; however these relationships have not yet been empirically tested within the Family Inequality Framework.

Basic needs. At any given time, approximately 2% of children in the U.S. are experiencing homelessness (National Center on Family Homelessness, 2009; Wakefield & Wildeman, 2014). Parallel to disparities in health and socio-economic status, rates of child homelessness are higher for children of color, with rates near 10% for African American children living in urban areas (Culhane & Metraux, 1999; Wakefield & Wildeman, 2014). In New York City alone, African American children experienced staying in a shelter at a rate up to thirty-five times higher than their age-matched white counterparts (Culhane & Metraux, 1999; Wakefield & Wildeman, 2014). Akin to other domains of material hardship, homelessness for children intersect with other risk experiences including health issues, academic problems, food scarcity,

and poly-victimization, among others (National Center on Family Homelessness, 2011; Wakefield & Wildeman, 2014).

Glaze and Maruschak (2010) report that in the year preceding arrest and subsequent incarceration, approximately 9% of individuals reported experiencing homelessness and housing instability. The empirical literature exploring the homelessness-incarceration link focus largely on adult men, while few studies have examined the parental incarceration-child housing instability link (Wakefield & Wildeman, 2014). Preliminary research indicates that parental incarceration and material hardship are linked to housing instability, though the exact linkage is not clearly identified (Foster & Hagan, 2007; Wakefield & Wildeman, 2014). More recently, Wakefield and Wildeman (2014) conducted analysis in this area using the Fragile Families and Child Wellbeing data.

Results from a rigorous analysis indicated that overall, children of recently incarcerated parents were more likely to experience homelessness and housing instability in the past twelve months than children of non-recently incarcerated parents (Wakefield & Wildeman, 2014). However, these results vastly differed by gender of the incarcerated parent. Paternal incarceration predicted a 95% increase in the chances of a child experiencing housing instability while maternal incarceration only predicted an 18% chance of the same phenomenon (Wakefield & Wildeman, 2014). Further, results indicated that paternal incarceration "massively increased" African American children's odds of experiencing housing instability. This latter finding is consistent with the racial disparities observed in mass incarceration and may point to secondary consequences for parents of color experiencing incarceration at disproportionately higher rates than white parents. Following further analysis, the authors of the aforementioned study conclude that 20% of the causal relationship found were a result of both financial problems and housing

instability (Wakefield & Wildeman, 2014). While this line of research is need of further replication, it underscores the link between housing instability, overall material hardship, and parental incarceration, and the importance of both financial problems and housing instability in looking at the whole picture of material hardship.

Beyond the family financial implications associated with housing instability, there is a strong empirical link between a child's housing instability and general youth developmental outcomes. Most notably, studies have demonstrated that children experiencing housing instability tend to have lower academic achievement, poorer school attendance, and higher incidences of behavioral problems at school (Fantuzzo, LeBoeuf, Chen, Rouse & Culhane, 2012). Further, these same children experiencing housing instability tend to demonstrate diminished social skills and studying habits imperative to academic success (Fantuzzo et al., 2012). These findings are multidimensional as they highlight potential risks across both social and academic (i.e., reading and math) performance domains.

Recent research has used longitudinal data to explain these effects as stemming from homelessness or school mobility (i.e., changing schools due to moving or change in primary caregiver), with the combination of homeless and school mobility placing children at the highest risk for poor academic adjustment (Fantuzzo et al., 2012). Fantuzzo and colleagues (2012) report that the most consistent predictor of poor academic performance was frequency of changing schools or anticipation of changing schools. These findings are especially salient for children with an incarcerated parent, as a significant change in financial status during parental incarceration may result in moving and/or school mobility. Given the high likelihood for families with an incarcerated parent to experience material hardship, it is logical that a child's academic performance may be negatively impacted through declining financial and housing

stability. Preliminary research suggests that the quality of a child's physical environment may play an important role in academic performance and overall wellbeing (Ismail, Badayai, & Kulasingam, 2017). Consequently, it is imperative to consider the specific effects of housing stability, within material hardship, on child developmental outcomes such as academic adjustment.

Summary. In the present study, material hardship was conceptualized as the interplay of financial instability and housing concerns. Material hardship is understood to be both a risk factor to incarceration, as well as exacerbated during incarceration, that impacts critical family processes and outcomes. This conceptualization is consistent with Family Stress Theory (Conger & Elder, 1994) and the Family Inequality Framework (Arditti, 2018). Specifically, material hardship may act as a recursive feedback loop in which the demands-to-resources ratio predisposes a family to a crisis (e.g., parental incarceration), which further increases the family's demands (e.g., additional responsibility on remaining parent) while decreasing the family's resources (e.g., loss of income). The strain of economic hardship, especially during parental incarceration, may place spillover stress on family relationships and diminish the remaining parent's abilities to parent and function optimally (Conger et al., 2010). Finally, these effects may propagate further experiences of child and family social inequality with specific deleterious effects on child youth developmental outcomes, such as academic adjustment during parental incarceration.

Family Resilience Processes

Social Support. Social support is a broad term that generally means receiving assistance in the form of a resource. This multidimensional concept may be experienced as financial, emotional, or instrumental support by friends, family, community members, or others in the

position to provide help (Dumont & Provost, 1999). Regardless of the type of social support, or from whom it is received, it is generally believed that social support can act as a protective factor during times of stress.

For many families, incarceration may unexpectedly and suddenly create a single parent household (Arditti, 2012; Lowenstein, 1986). For the parent at home, this may mean an abrupt increase in financial, household, and parenting responsibilities (Lowenstein, 1986). Other types of family loss resulting in sudden one parent households (i.e., deployment, death, etc.,) usually are accompanied by support and sympathy for the involuntary nature of the structural family change (Arditti, 2012). Incarceration, however, does not tend to draw the same type of social support. As Arditti (2012) states,

> There are no casseroles brought to the house for the 'prison widow' and her children. There is no government assistance or formal recognition that a significant loss has occurred in the family that will bear heavily on children's welfare (p. 112).

Indeed, the social stigma surrounding incarceration may impede a family's ability to grieve the ambiguous loss often inherent to parental incarceration. Beyond lack of social support, some families may perceive others as blaming or degrading (Arditti, 2012; Codd, 1998; Comfort, 2008). Family members may even experience being treated as if they are inmates by carceral staff during visits (Arditti, Lambert-Shute, & Joes, 2003; Codd, 2008; Richards & McWilliams, 1996).

The majority of the literature on social support for families experiencing material hardship during incarceration suggests that those who are most likely to be burdened with providing additional support during parental incarceration are African American women (i.e., mothers) and grandmothers; both of whom tend to be heavily relied on for caregiving responsibilities (Christian & Thomas, 2009). However, who supports these women? From a

family stress process perspective, additional resources are needed in times of strain to promote family adaptation.

Arditti (2012) reports that the most common experience for suddenly single parent families due to parental incarceration is a lack of social support. A qualitative study conducted by Arditti and colleagues (2003) lends voice to the experiences of these women with statements such as, “I’m struggling all by myself to handle this” and “no peace, no break, no patience, and no help” (p. 200). Feelings of isolation and role strain by the partner left behind are likely exacerbated by experiences of stigma that reduce the overall social support immediately available to families facing parental incarceration (Wildeman & Wang, 2017).

The existing literature lends support to an overwhelming lack of social support for families experiencing parental incarceration. However, social support may be a key resilience process to helping families navigate the additional strains consequent of material hardship exacerbated by parental incarceration. Scholars agree that social support likely plays an important role in navigating the many consequences a family experiences during parental incarceration (Arditti, 2005; Besemer, Van de Weijer, & Dennison, 2018). Existing research supports the idea that social support may mitigate stress via a buffering effect that offsets the impact of stress on wellbeing (Dumont & Provost, 1999).

Specific to parenting stress, research has indicated that social support does indeed demonstrate a buffering effect on parental stress (Ostberg & Hagekull, 2000). Further, low social support appears to be an indicator of overall parenting stress (Ostberg & Hagekull, 2000). Interestingly, although much of the social support and parenting stress research does not explicitly focus on parental incarceration as a contextual variable (Besemer et al., 2018), it does situate parenting stress in the context of characteristics that are commonly associated with

parental incarceration such as financial stress, life events, and caregiver strain (Ostberg & Hagekull, 2000). Further, a study conducted by Besemer and Dennison (2018b) testing the FSPP model found that parental incarceration was linked to greater parenting stress. Separately, these studies indicate the important role of parenting stress in understanding family processes during parental incarceration.

Another study with incarcerated parents demonstrated that social support appeared to have a mediating effect on the parent's psychosocial functioning and depressive symptoms (Cassidy et al., 2010). Social support may play a unique role in the effects of material hardship on child outcomes in the context of parental incarceration. General population findings suggest that social support may be lowest among the most disadvantaged families, with exceptions found in communities with strong neighborhood ties (Besemer et al., 2018; Stack, 1974). Similar to economic hardship, it is unclear whether low social support acts as a precursor to, or an outcome of, family stress. It is likely that there is a recursive effect in which the most disadvantage families lack social support which in turn may exacerbate family stress.

For most families, parental incarceration appears to represent a culmination of multiple intersecting disadvantages including economic hardship, instability, and low social support. While it is clear that the lack of social support may exacerbate negative family outcomes, a moderate degree of social support may serve as a family resilience process. Parental incarceration scholars agree that here is much to be done in regard to clearly understanding the degree to which social support mediates child and family outcomes (Arditti, 2016).

Parental mental health symptoms. Parents navigating mental health symptoms may experience unique parenting challenges that mentally well individuals do not. Indeed, poor parental mental health may erode at a parent's ability to function well, use positive parenting and

coping skills, and abstain from harsh and even damaging parenting practices. Poor parental mental health is consistently linked with negative child and family outcomes across a variety of domains (Noyes et al., 2018). Conversely, we expect that parents with good or well managed mental health would be linked with positive child and family outcomes. Scholars agree that the degree to which a non-incarcerated parent has good mental health, and can manage family resources, may buffer against adverse outcomes during parental incarceration (Arditti, 2018; Besemer & Dennison, 2018a; 2018b; Dallaire, 2007; Wildeman, 2014). This is evident in studies that demonstrate positive prosocial and well-being outcomes for children of parents with little or well-managed stress (Burnson, 2016). Consequently, parental mental health may serve as a family resilience process in which child wellbeing is a function of parental wellness in spite of other contextual stressors such as material hardship (Wildeman, 2014). Although previous research has indicated the general importance of having a stable caregiver during parental incarceration (Dallaire, 2007), parental mental health as a specific mediating resilience process has yet to be empirically tested with families experiencing parental incarceration.

When mental health intersects with single parenthood, the parent at home may experience worsening of symptoms, increased stress, and decreased support. In a study of youth experiencing acute psychiatric issues, approximately 63% of their parents endorsed mental health symptoms and/or diagnoses themselves (Rice & Tan, 2017). Further, in a subsequent qualitative study, these same youth perceived their parent as unavailable in relation to their mental health challenges. When describing how they coped, the participants reported detaching from their family and internalizing their issues as a result of the perceived unavailability of their parent (Rice & Tan, 2017). These findings point to the potential for poor child outcomes to be, in part, a function of poor caregiver mental health either directly through relational processes and

parenting or indirectly through low functioning commonly associated with mental health diagnoses such as depression and anxiety.

The link between parental mental health and child wellbeing outcomes is well documented. It is logical that when parents are psychologically well, their parenting is likely more authoritative, warm, and appropriate. It also stands to reason that the opposite may occur as well, in that when a parent is stressed and not psychologically well, their parenting capabilities may be impeded. Dallaire and Aaron (2010) report that a child's response to parental incarceration may be directly connected to how the parental caregiver's mental health is impacted by the parental incarceration. Further, given the strain (e.g., economic, relational, etc.) and secondary prisonization (i.e., consequences for families with an incarcerated parent such as stigma, loss of income, social exclusion, to name a few (Aiello & McCorkel, 2018; Comfort, 2008)) that can occur on a caregiving-parent while their partner is incarcerated, it is possible, and perhaps likely, that parental incarceration may take a mental health toll on the parent left behind (Arditti, 2012; Comfort, 2008). Consequently, it is imperative to better understand the mediating role parental mental health may have on the effects of material hardship on child well-being in the context of parental incarceration.

Positive parenting. Researchers have hypothesized that when a parent is incarcerated, their partner who is now in a role akin to single parenthood may impede effective parenting skills as a result of economic strain and psychological distress (Turney, 2014). While not causal in nature, preliminary research has suggested that paternal incarceration is positively correlated with maternal authoritarian parenting practices and neglect (Turney, 2014). Further, these mothers tend to report increased experiences of material hardship as well as family instability (Turney, 2014). In a study using the Fragile Families and Child Wellbeing data, Turney (2014)

found that for parents who were cohabitating prior to incarceration, child neglect and maternal physical aggression were positively associated with the paternal incarceration event. Further, it is suggested that some of these findings may be at least in part explained by parental mental health and material hardship (Turney, 2014).

Parental incarceration scholars tend to agree that when a parent is incarcerated, the caregiving-parent's ability to manage parenting duties alone is crucial to child wellbeing, assuming that the incarcerated parent was in residence and contributing to parenting responsibilities. It is logical that for parents who cohabitate prior to one's incarceration, the carceral event would likely place further stress (i.e., economic, psychological, etc.) on the caregiving parent at home. This is supported by research in which findings highlight associations between the caregiving-parent's parenting and overall stability for children during parental incarceration (Arditti et al., 2003; Dallaire, 2007; Poehlmann, Shlafer, Maes, & Hanneman, 2008; Poehlmann-Tynan & Arditti, 2018; Western & Smith, 2018).

Within Family Stress Theory and the Family Inequality Framework, the role of strain in family relationships can be conceptualized as a consequence of material hardship during parental incarceration, exacerbating strain on the caregiving parent at home, and that the collateral harm may be to the child through the primary caregiver's parenting. Conversely, the presence of positive (i.e., warm and authoritative) parenting practices could foster positive outcomes for youth with an incarcerated parent. High quality parenting has begun to be conceptualized as a resilience process that mediates the potential effects of parental incarceration (Arditti, 2012; 2018; Dallaire, 2007; Geller et al., 2012; Turney & Wildeman, 2013; Western & Smith, 2018). However, further research is needed to verify the degree to which positive caregiver skills serve as a mediating family-based resilience process (Arditti, 2012).

Summary of resilience processes. The inclusion of resilience and mental health processes helps us understand how families adapt to and overcome the cumulative disadvantages and poor child outcomes that are often inherent to parental incarceration. The present study seeks to understand how the preceding concepts (i.e., social support, parental mental health, and positive parenting) that together represent family resilience processes, may mediate the effects of material hardship on child school adjustment. While these three resilience processes are not comprehensive, they do reflect key areas of concern when considering the contexts of parental incarceration and map onto Masten and Coatsworth's (1998) criteria for conducting resilience research. However, the majority of the extant literature regarding these concepts are deficit based, reporting poor outcomes. In this manner, much of the existing research utilizes between-group comparisons and scholars are beginning to highlight the importance of within-group analysis when studying resilience processes in the context of parental incarceration (Arditti, 2012; Arditti & Johnson, under review; Muentner et al., 2019). Less is known about how sufficient social support, parental mental health, and parenting skills, or a combination of these, may act as a resilience processes and mitigate the adverse effects material hardship can have on child outcomes within parental incarceration experiences.

Youth Academic Adjustment

There are many domains of functioning that scholars look to in examining outcomes of children experiencing parental incarceration and material hardship including, but not limited to, antisocial behavior, internalizing and externalizing behavior, future criminal justice system involvement, socio-economic status, and academic achievement. With regard to academic adjustment, parental incarceration has been associated with poor functioning across multiple academic domains including class ranking, truancy, class failure/pass rates, education

incompletion, and failure to complete standardized exams (Hagan & Foster, 2012). However, findings have been mixed and scholars suggest that this may be a result of age, with academic failure compounding overtime and worsening in mid-to-late adolescence (Hagan & Foster, 2012).

Examining youth academic adjustment in the context of parental incarceration is important for several reasons. Rigorous resilience research criteria highlight the importance of examining child development outcomes in the context of family processes using within-group analyses (Arditti & Johnson, under review; Poehlmann-Tynan & Arditti, 2018). Academic adjustment may provide a multidimensional perspective on child development as it examines skills across social, behavioral, and learning domains (Morales-Vives, Camps, Manuel-Duenas, 2020). Academic adjustment is understood to be a generally reliable indicator of well-being in later life (Turney & Goodsell, 2018). Further, academic adjustment has been shown to be related to conditions of poverty and family inequality (Duncan, Ziol-Guest, & Kalil, 2010; Lee, 2014; Lee & Jackson, 2017), which may perpetuate intergenerational cycles of criminal justice involvement. Consequently, in order to conduct meticulous resilience research in the present study, a developmental outcome was chosen that not only represents present child functioning but serves as a potential indicator of future adjustment in adult life (Turney & Goodsell, 2018).

Adjustment. Children of incarcerated parents tend to perform more poorly in school than children of non-incarcerated parents. Using ADD Health data, Hagan and Foster (2012) conducted a longitudinal analysis on both the effects of parental incarceration on individual academic performance as well as the influence of spillover effects in school catchment areas with high concentrations of incarcerated parents. Results indicated that children of an incarcerated

parent had significantly lower GPAs, with a larger effect size for maternal incarceration than paternal incarceration (Hagan & Foster, 2012).

College graduation rates were also significantly lower for children of incarcerated parents than children with never incarcerated parents (Hagan & Foster, 2012). Interestingly, the authors observed a school-level effect in which schools with higher than average rates of parental incarceration saw declines in graduation rates, even for children without an incarcerated parent; suggesting spillover effects by geographical area (Hagan & Foster, 2012).

While academic performance appears to be consistently lower for children of incarcerated parents, findings on school dropout are mixed. Cho (2011) conducted a large-scale quantitative analysis of academic dropout rates for youth. Findings indicated that youth are at a significantly higher risk for dropping out of school in the year that parental incarceration begun (Cho, 2011). Further, consistent with Hagan and Foster's (2012) findings, youth with an incarcerated parent are neither more nor less likely to drop out of school when attending school in an area of high rates of parental incarceration. One potential explanation for this finding is that teachers may increase sympathy and lower expectations for youth experiencing parental incarceration more than other common reasons for poor academic performance (Cho, 2011). An experimental study by Dallaire and colleagues (2010) supports this hypothesis that teachers may have an awareness and higher empathy that coalesce into lowered expectations for students who may be struggling as a result of parental incarceration.

In contrast, a study by Cho (2009) found that having an incarcerated parent did not decrease an elementary school child's chance of school retention, and even showed a moderate effect of promoting school retention. Cho (2009) theorized that this may be a result of teachers

being sympathetic to young children's experiences of parental incarceration. Poor academic achievement is consistently associated with material hardship and parental incarceration.

Cho's (2009; 2011) and Dallaire and colleagues (2010) findings suggest there may be a prosocial factor that is potentially mediating the otherwise adverse effects that material hardship can have on youth academic adjustment during parental incarceration. However, there is presently a dearth of research examining mediating factors on academic adjustment in the context of parental incarceration. The present study fills this gap by specifically looking at how resilience-based family processes, including interaction with the school, may mediate the effects of material hardship on school adjustment during parental incarceration.

Concentration. Internalizing and externalizing disorders are commonly diagnosed in children with adverse childhood experiences. Children with an incarcerated parent are significantly more likely to receive such an internalizing and/or externalizing disorder diagnosis, likely due to higher patterns of existing risks such as material hardship, family instability, and general family-level stress (Miller & Barnes, 2015; Smyke, Bailey, & Zeanah, 2017). In particular, Attention Deficit Hyperactive Disorder (ADHD), a childhood externalizing disorder, is diagnosed at higher rates in families experiencing parental incarceration than families who are/have not experiencing parental incarceration (Phillips, Burns, Wagner, Kramer, & Robbins, 2002). Consequently, it is imperative that symptoms of externalizing disorders be considered with regard to overall well-being. Given the proclivity for youth with an incarcerated parent to be diagnosed with an externalizing disorder (e.g., ADHD), ability to concentrate in school is

important in examining the degree to which youth with an incarcerated parent are adjusting in school (Phillips et al., 2002).

Social Inclusion. Social inclusion is understood as the degree to which one experiences interpersonal connections, and by extension community connectedness, that facilitate access to resources and institutions (Tua & Banerjee, 2019). Social inclusion is a type of acceptance from others; however experiences of social inclusion are often broad in nature. In this manner, social inclusion may be best understood as an absence of social exclusion. Social exclusion is defined by Walker and Walker (1997) as, "the process of being shut out, fully or partially, from any of the social, economic, political, or cultural systems which determine the social integration of a person in society". While much of the literature focuses on exclusion from social institutions such as the civic engagement (right to vote), employment, and socioeconomic opportunities, the concept also extends to youth of incarcerated parents who experience exclusion by proxy. This phenomenon has been referred to intergenerational social exclusion (Besemer & Dennison, 2018a; Foster & Hagan, 2007; 2015).

Aside from academic performance, social functioning is a normative part of academic experiences for school-aged children. The negative effects of social exclusion, and to the extreme, bullying, on a child's experience in school as well as overall mental health is well documented. Children with an incarcerated parent may experience stigma and social exclusion in school via bullying or peer isolation. In one study, the majority of children interviewed discussed having strained social relationships at school, with many children reporting only having a few friends if any at all (Bocknek, Sanderson, & Britner, 2008). The children in these interviews attributed their negative social experiences at school to their parent's incarceration, personal attributes, and frequency of changing schools (Bocknek et al., 2008). While explaining social

withdrawal at school, one child described a fear of the school security guard and the associated reminders of incarcerated settings (Bocknek et al., 2008).

Children with an incarcerated parent have existing risk factors with material hardship, emotion regulation, and overall stability (Myers et al., 2013). When these risk factors intersect with social stigma of poverty and incarceration in the school setting, it is not surprising that some children with an incarcerated parent may experience social exclusion. In a study examining experiences of bullying (as the victim) for children of incarcerated parents, it was found that these children are commonly the targets of peer social exclusion and that they often struggled to emotionally regulate (Myers et al., 2013). Further, Kahya and Ekinci (2018) found that at least half of the children in their study (n = 6; 50%) reported being stigmatized and excluded by peers as a result of parental incarceration, and expressed reluctance to share their parent's incarceration with others out of fear of social exclusion.

A child's academic experience is more than just their education. Their experiences with peers may also contribute to their association and engagement with school. In addition to missing out on holidays, traditions, and developmental milestones with an incarcerated parent, children may experience social isolation and diminished view of self as a result of parental incarceration (Dennison & Besemer, 2018). These experiences result in missing out on critical activities that may be central to the child's sociocultural context as well as the relationship with his or her incarcerated parent (Dennison & Besemer, 2018).

Social exclusion experiences not only are likely to have detrimental consequences for children with an incarcerated parent, but represent additional ways in which parental imprisonment also punishes family members with long term implications for family relationships and well-being. In this way, social inclusion at school appears to be one indicator of overall

academic adjustment. Understanding social inclusion in addition to academic performance provides a more complete picture of how a child may be adjusting across multiple domains (i.e., social and learning) at school during parental incarceration.

Summary

Incarcerated persons are among the most disadvantaged across multiple domains including physical and mental health, socioeconomic status, and social location. The incarceration process tends to exacerbate the intersection of these experiences, churning out further traumatized, unwell, and disadvantaged individuals. It is not surprising that these effects can be transmitted to the families of incarcerated persons, increasing the risk of material hardship, instability, mental health and substance use issues, and intergenerational criminal justice system involvement, to name a few. The theoretical Family Inequality Framework (Arditti, 2018) has been instrumental in helping conceptualize family perspectives of family incarceration across the lifespan.

While the findings on concepts within the Family Inequality Framework (Arditti, 2018) in relation to material hardship during parental incarceration are robust, the degree to which they are related to family resilience process is significantly less clear. Specifically, the role of material hardship in family processes during parental incarceration is well known to both be a precursor (i.e., contextual stressor) and intensifier of family stress. Social support, parental mental health, and parenting skills are all factors at risk of being impeded or destabilized during parental incarceration. Further, poor academic performance is consistently associated with negative outcomes for children when a parent is incarcerated. What is less known is how all of these processes interact within one analytic model. Using a strengths-based family process perspective, the present study examined the degree to which stable social support, parental mental health, and

positive parenting skills may mediate school adjustment when caregivers report past or current paternal incarceration. Rather than examining how the absence of these important resilience processes yield deleterious effects for families, the present study seeks to understand how, and to what degree, the presence of these resilience processes may mitigate adverse child outcomes related to material hardship in contexts of paternal incarceration and contribute to overall healthy family functioning. This line of empirical inquiry is an emerging area of research in need of empirical investigation to provide a whole picture of the family perspective in parental incarceration.

The aforementioned risk outcomes and processes are well-documented in the literature and research is still forthcoming. Specific to children, the parental incarceration literature has historically focused on pathology-based outcomes (Poehlmann-Tynan & Arditti, 2018). Fewer studies have examined the role of resilience processes in families facing parental incarceration. Rigorous resilience research requires the presence of risk (i.e., situations in which pathologic outcomes would be reasonably expected), identifying one or more protective resources (i.e., assets), and the measurement of healthy developmental functioning (i.e., child academic competence) (Luthar & Cushing, 1999; Poehlmann-Tynan & Arditti, 2018). The present study meets all three criteria as material hardship during parental incarceration is considered a risk that would commonly yield adverse experiences, three protective resources were built into the model and identified as resilience processes, and a measurement of developmental functioning (i.e., school adjustment) is the outcome variable.

Using the resilience research criteria outlined by Poehlmann-Tynan and Arditti (2018), the present study tested an empirical model informed by the Family Inequality Framework (Arditti, 2018) that provides important information about the role of resilience processes in the

effects of material hardship on child outcomes during parental incarceration. Findings from this study can advance the parental incarceration literature, refine theoretical conceptualizations, and inform intervention programs for families navigating parental incarceration.

Proposed Study

There are significant methodological barriers to conducting research with incarcerated persons, and by extension their families, despite a clear and present need to know more about incarceration demographics, trends, rehabilitation efficacy, and effects on the family (Arditti et al., 2003; Cislo & Trestman, 2013; Lowenstein, 1986; Reagan & Shelton, 2016). Incarcerated persons are highly protected due to a history of exploitation, involuntary involvement, and even intentional harmful medical treatment (Cislo & Trestman, 2013). In addition to human rights violations, incarcerated persons are often difficult to access due to incongruent agendas between researchers and incarceration administrations (Reagan & Shelton, 2016). For example, although prison staff primarily focus on security, researcher agendas generally aim to promote physical and mental healthcare services and wellbeing (Cislo & Trestman, 2013; Reagan & Shelton, 2016).

Consequently, incarcerated populations, and by extension their families, can be difficult to access for research purposes. Large datasets on incarcerated populations are rare, which often precludes conducting "gold-standard research" such as longitudinal studies in the criminal justice system (Reagan & Shelton, 2016). Even rarer are data containing family process perspectives within the context of parental incarceration. While efforts are underway to increase responsible and quality work in incarceration settings, researchers are often dependent on existing and commonly used data such as the Fragile Families and Child Wellbeing study, as well as the National Longitudinal Study of Adolescent Adult Health ("Add Health"); the latter of which

incorporated items on parental incarceration in recent waves but still lack a comprehensive family process perspective.

In addition to the difficulty in accessing incarcerated persons and their family members for research purposes, scholars have documented how incarceration is such a highly stigmatizing experience that family members with an incarcerated loved one are often pathologized and therefore marginalized in family preservation research efforts (Arditti et al., 2003; Lowenstein, 1986). This transmission may be understood as a secondary stigmatization process, in which the pathology and stigma that incarcerated persons are often labeled with can extend to their family members by association. This phenomenon may be a potential underlying explanation for the lack of comprehensive empirical research on the effects of incarceration from a family process perspective (Arditti et al., 2003; Lowenstein, 1986).

At present, the Family Inequality Framework (Arditti, 2018) has not been empirically tested. As new theories emerge, opportunities to test them must be seized. Existing data with a focus on family process perspectives is particularly attractive due to the historic methodological barriers to data collection as well as a general lack of existing family process data. In order to test the proposed model, this research conducted secondary analysis of data collected by the Danish Center for Social Science Research (VIVE). VIVE is a Danish government-funded research institute that designed and implemented a national survey among 727 caregivers of youth (aged 11-17) with an incarcerated parent. The caregiver-completed survey contained items inquiring about parental incarceration, family structure, parenting, friends, school, mental health, leisure time, family and home environment, risk behavior, and child outcomes.

Additional indicators in the survey measured caregiver perceptions of parenting, mental health, and social support. Youth school adjustment factors were also assessed as child

development outcomes. These survey items were instrumental in testing the influence of parental incarceration on proximal processes in youth adjustment. These data were collected in 2015 but until now had not yet been analyzed. Parental incarceration data containing family process variables are not typically available in the U.S. and consequently was a unique and critical opportunity to better understand the direct and indirect effects on youth adjustment during parental incarceration. Further, these data were unique when compared to existing large data sets, such as the Fragile Families and Child Wellbeing and ADD Health studies, due to the comprehensive focus on family processes as well as participants in both parental incarceration and non-parental incarceration conditions.

Research Goal

The goal of the present study was twofold. First, to advance theory and scholarship pertaining to family inequality in the context of parental incarceration. A second goal was to advance a resilience framework, the theoretical Family Inequality Framework (Arditti, 2018), based on a within-group analysis. A mediation structural equation analytic model informed by the conceptual Family Inequality Framework (Arditti, 2018) was employed to examine the degree to which family resilience processes mediate the effects of material hardship on child school adjustment during parental incarceration. Findings from this analysis can inform refinement of the theoretical model and, in turn, guide future empirical testing of family experiences of parental incarceration. Second, findings from this study can inform the development of intervention programs aimed at mitigating risks and promoting resilience within families facing parental incarceration. Hypotheses of the present study are described below while the following chapter focuses on the data source, measures, data preparation, analytic procedures, and structural equation modeling data interpretation criteria.

Hypotheses

H1: Direct effect – the degree of material hardship will be negatively associated with childhood school adjustment.

H2: Indirect effect – the effects of material hardship on academic adjustment will be mediated (either partially or fully) by family resilience processes (i.e., Positive parenting, Parental mental health, & Social support).

CHAPTER III: METHOD

Data Source

As part of an international research consortium, Dr. Joyce Arditti and I were invited to the VIVE Danish Social Science Research Center to discuss the possibility of conducting data analysis on a data set collected by VIVE. Previous discussions between Dr. Arditti and Danish colleagues occurred during the "Symposium on Prisoners' Families, Punishment, and Inequality", held at St. Hilda's College, Oxford, UK during 2015 and 2017. These conversations had revealed the potential for testing the Family Inequality Framework (Arditti, 2018), which was a theoretical model advanced by Dr. Arditti during the international symposium, with the Danish data. Ultimately, both the Family Inequality Framework and descriptive information about the Danish data were published in an edited volume which represented the proceedings of symposium (Arditti, 2018; Oldrup & Frederiksen, 2018).

During the spring of 2018, Dr. Arditti and I traveled to Copenhagen, Denmark, on an international research grant to review data and discuss potential analyses with researchers at VIVE. During this visit, we inspected the data and held a series of conversations about how this data might map onto the Family Inequality Framework. After consultation, we agreed that these data provided a unique opportunity to empirically test the Family Inequality Framework. It was decided that I would take primary responsibility for conducting this analysis as my dissertation work. These data present a unique and rare opportunity to examine family effects of material hardship in the context of paternal incarceration because of its inclusion of caregiver reported social support indicators, parenting behaviors, and parental mental health. Historically, parental incarceration research has generally focused on either social support indicators or parenting and caregiver factors, but not the combination of these social processes in family contexts (Oldrup &

Fredericksen, 2018). Both of these factors are essential aspects of the Family Inequality Framework, and also key resilience mechanisms in the face of both economic hardship (Geller et al., 2010; Wakefield & Wildeman, 2014) and parental incarceration (Oldrup & Frederiksen, 2018).

However, the data are not without limitations. For example, the methodology was developed by the Danish Center for Social Science Research and not specific to the Family Inequality Framework. Consequently, the survey assessed a range of topics, many of which directly map onto the Family Inequality Framework with the exception of youth academic adjustment. Youth academic adjustment was identified as the variable most suited as the outcome variable. However, while the items representing youth academic adjustment were adequate, the variable itself was not as comprehensive in its ability to represent broader child development outcomes such as internalizing and externalizing disorders. While the data are not without its limitations, the data provide a unique opportunity to empirically examine an important conceptual parental incarceration resilience framework. Prior to beginning data analysis, Institutional Review Board (IRB) approval (Appendix D) was obtained from the university to specifically conduct secondary data analysis. Once IRB approval was obtained, I collaborated with the VIVE Danish Social Science Research Institute to coordinate data retrieval per IRB protocols.

The present study utilized data from a survey that contained caregiver-completed items inquiring about family risk, resilience processes, and youth academic adjustment outcomes important to parental incarceration research. In 2015, using data from the national register, surveys were mailed at random to families who were experiencing parental incarceration as well as families who were not experiencing parental incarceration. Surveys were returned by 991

families. The majority (n =727) of returned surveys were in the parental incarceration group, while the remainder (n =264) of returned surveys were in the non-parental incarceration group. All respondents of this parental incarceration sub-sample (n=727) had experienced incarceration of the child's biological father at sometime within the three years prior to, or during, data collection. Consistent with a resilience framework, a within group analysis was conducted, therefore, only the sub-sample (n= 727) consisting of caregivers who reported an instance of paternal incarceration for at least one of their children was used for the present analysis.

Sample characteristics

The majority of respondent caregivers identified as female (n=678; 93.3%) while the remainder (n= 49; 6.7%) identified as male. Caregivers responded to items with regard to a specific child in their care at the time of survey completion. Child gender ratio was nearly even with half (n= 366; 50.3%) identified as female while the remainder (n= 361; 46.7%) were male. Surveys were sent to caregivers of youth with an incarcerated father in one of four age groups: 11, 13, 15, 17. Reported child age at the time of survey completion was relatively even across age groups with the highest frequency (n=238; 32.7%) of children aged 11, followed by 13 (n=204; 28.1%), 15 (n=147; 20.2%), and 17 (n=138; 19.0%).

The majority of caregiver respondents identified as the child's biological mother (n=602; 82.8%). The remaining respondents identified as a foster-mom (n=66; 9.1%), biological father (n=23; 3.2%), paternal grandmother (n=6; 0.8%), maternal grandmother (n=5; 0.7%), other caregiver type (n=2; 0.3%), and step-mom (n=1; 0.1%). A small percentage of respondents (n=22; 3.0%) did not provide an answer. Over half of respondents (n=420; 57.8%) resided in a one family home with the next largest group (n=211; 29.0%) residing in an apartment at time of survey completion. The remainder reported residing on a farm (n=41; 5.6%), in a residential

institution (n=19; 2.6 %), two-family home (n=18; 2.5%), other residence type (n=10; 1.4%), mixed home (n=7; 1.0%), and summerhouse (n=1; 0.1%). Demographic information was not obtained in the original data collection regarding the incarcerated parent (i.e., sentence length, crime, proximity of family residence to carceral setting, gender, age, etc.)

Measures

While the data were collected in 2015, inferential analyses had not previously been conducted. Decisions about the proposed measures, summarized below, were informed by preliminary inspection of the Danish survey and existing descriptive data (Oldrup & Frederiksen, 2018) in collaboration with VIVE in May of 2018. Internal reliability consistency analysis was performed to examine the indicators of each respective latent construct. Initial factor analyses were examined by each construct using a principle component analysis with Varimax (orthogonal) rotation, and then overall within the measurement model using a confirmatory factor analysis. Results from these analyses are presented below.

Material hardship. The latent construct material hardship was represented by four observed indicators representing financial problems, late bills, housing issues, and environmental stress. Each of these four indicators was represented by one value; a summation of scale items to reduce the overall number of items per indicator and better estimate the material hardship construct given the sample size. Each indicator was comprised of a number of "yes" or "no" item responses that were summed to represent the observed indicator value. A response of "yes" was assigned a value of 1 to indicate the presence of material hardship while a "no" response was assigned a value of 0 to indicate an absence of hardship. The indicator financial problems was measured by 10 questions that inquired about the caregiver's perceived ability to pay for essentials such as clothing, appliances, medical costs, food, leisure activities, and overall

financial distress. Late bills was measured by three questions asking if the participant struggled to pay rent, utilities, and general bills on time. Higher scores on material hardship equated with higher severity of financial burden, economic hardship, and difficulty meeting basic needs. Internal consistency reliability of the items within this construct was strong (α = .98). The principal component factor analysis yielded two factors and explained 98% of the variance.

Resilience processes. Guided by Family Stress Theory (Hill, 1949; Patterson, 1988; 2002) and the Family Inequality Framework (Arditti, 2018), family resilience processes were conceptualized as mediators and represented by three latent constructs in the conceptual analytic model (Figure 1). Factor analyses were conducted with each construct to assess validity and ensure the constructs are measured appropriately, the results of which are presented with each corresponding construct.

Positive parenting. The latent construct positive parenting was measured by three 5-point likert scale items asking participants the degree to which s/he: notices when their child does well, praises the child after she or he does a task well, and praises the child when s/he behaves well. Possible answers were: “never”, “almost never”, “sometimes”, “frequently”, and “always”. Responses were assigned a value of 0-4, with 0 representing “never” and 4 representing “always”. Higher scores equated with higher frequency of employing warm, authoritative parenting behaviors. Internal consistency reliability of the items within this construct was strong (α = .99). The principal component factor analysis yielded one factor and explained 99% of the variance.

Parental mental health symptoms. The latent construct parental mental health symptoms was measured by five 3-point likert scale items inquiring about the at-home primary caregiver’s experiences of mental health related symptoms. Possible responses were, “yes, but

have not been to the doctor about this", "yes, and have been to the doctor about this", and "no". Responses were treated as "yes/no" and assigned a value of 0-1, in which a lower value indicates an absence of mental health symptomology while a higher value indicates higher presence of mental health symptomology. Values assigned are the following: "yes, but have not been to the doctor about this" was coded as 1, "yes, and have been to the doctor about this" will be coded as 1, and "no" will be coded as 0. Items representing this construct asked participants if s/he experienced the following issues in the last year: anxiety, sadness, insomnia, body pain/aches, and a general feeling of being overwhelmed. Higher scores equated with a higher prevalence of mental health symptomology. Internal consistency reliability of the items within this construct was strong ($\alpha = .99$). The principal component factor analysis yielded one factor and explained 99% of the variance.

Social support. The final mediating latent construct was social support. Three summed indicators were used to represent this construct: community support, school support, and family support. Community support was measured by four summed 5-point likert scale items inquiring about the degree to which other extended relatives, friends/colleagues, neighbors, or others provide support to the family. Possible responses include: "do not have the person", "rarely", "sometimes", "often", and "always". Family support was represented by four summed 5-point likert scale items assessing the degree to which the participant expected support from the child's other parent, the participant's parents, the participants siblings, and the participant's in-laws. Possible responses included: "do not have the person", "rarely", "sometimes", "often", and "always". Responses were assigned values ranging from 1-5, with "do not have the person" coded as 1 and "always" coded as 5. A higher overall value represented a higher degree of support within the respective social support indicator. School support was measured by two

summed 5-point likert scale items that asked about the participant's perception of their relationship with the child's school (i.e., "The relationship between you and the school is very good") and the participant's opinion on how the school's communication with them regarding the child (i.e., "You have always felt informed of how the child is doing at school"). Possible responses were the following: "strongly disagree", "partially disagree", "neither disagree nor agree", "partially agree", and "strongly agree". Responses were assigned values ranging from 1-5, with "strongly disagree" coded as 1 and "strongly agree" coded as 5. A higher overall value represented positive connection with the child's school while a lower value indicated a poor relationship. Higher scores equated with strong levels of social support. Internal consistency reliability of the items within this construct was strong ($\alpha = .99$). The principal component factor analysis yielded three factors and explained 99% of the variance.

Youth academic adjustment. The endogenous variable was represented by three indicators. The first, adjustment, was measured by two summed likert scale items. The first two items were 5-point likert scale items assessing the caregiver's perception of the child's overall academic experiences. These items were, "My child is happy when at school", and "My child is doing well in class." Possible responses were the following: "strongly disagree", "partially disagree", "neither disagree nor agree", "partially agree", and "strongly agree". Responses were assigned values ranging from 1-5, with "strongly agree" coded as 5 and "strongly disagree" coded as 1. Higher scores indicated better overall adjustment while lower scores represented overall maladjustment. The second indicator, concentration, was a 3-point likert scale item that inquired about the child's ability to concentrate at school (i.e., "How well does the following statement fit: my child has had difficulty concentrating at school within the last six months"). Possible responses included, "very much", "partially", and "not at all". Responses were assigned

values ranging from 1-3, with 1 representing “very much” and 3 representing “not at all”. Higher scores indicated higher concentration functioning while lower scores indicate problems with concentration in school. The final indicator, social inclusion, inquired about the caregiver’s perception of their child’s social experiences at school including being bullied and isolated by peers. These items included, “How well does the following statement fit: my child has been bullied/picked on by peers at school in the last six months”, and “How well does the following statement fit: my child has been isolated/frozen out by peers at school in the last six months”. Possible responses included, “very much”, “partially”, and “not at all”. Responses were assigned values ranging from 1-3, with 1 representing “very much” and 3 representing “not at all”. Higher values for each indicator represented a higher degree of academic and social adjustment in school while lower scores represented social exclusion. Higher scores equated with a stronger degree of youth academic adjustment. Internal consistency reliability of the items within this construct was strong ($\alpha = .80$). The principal component factor analysis yielded three factors and explained 99% of the variance.

Data Analyses

Data Preparation. Preparation for this study required an extensive review of the data using preliminary analyses. Distributions of each variable were examined, and crosstabs were calculated to assess frequencies and distributions, identify outliers, and create plots. Variables for which there was insufficient prevalence or insufficient power were excluded. Next, initial bivariate associations between individual constructs were calculated to determine the magnitude and direction of the relationships (Tables 2, 3). This step provided an assessment of whether the

hypothesized relationships between variables were supported, providing sufficient justification for proceeding with model construction.

Once the model was developed, data descriptives (i.e., standard deviations, means, skewness and kurtosis) were calculated in SPSS (version 23) to determine univariate normality of data (Table 1). Skewness and kurtosis values were considered normal if they were within the range between -2 to 2, which is an indicator of normal univariate distribution of data (Jöreskog & Sörbom, 1996). Multivariate normality of the data, as well as any potential outliers, was identified in Mplus (Muthén & Muthén, 2019) using the aforementioned normal ranges of skewness and kurtosis.

Further, variable correlations were calculated to ensure variables were not too highly correlated with one another, which would indicate issues of multicollinearity (Cohen, Cohen, West, & Aiken, 2003). Multicollinearity was also assessed in SPSS by ensuring tolerance and variance inflation factor (VIF) scores fell within normal ranges (Cohen et al., 2003). The data were reviewed to explore potential patterns and/or the random degree of missing data. The percentage of missing data was lower than 3%; therefore, it was not necessary to treat missing data with multiple imputation with EM algorithm which is standard for data with more than 10% missing.

Structural Equation Modeling. Structural equation modeling (SEM) was the primary method of multivariate analysis in the present study. SEM is an ideal method of covariate based multivariate analysis as it allows researchers to test theoretical models with quantitative data (Kline, 2016). Further, employing SEM allows researchers to test hypothesized relationships between variables (Kline, 2016). Finally, a major advantage of using SEM is that it accounts for measurement error, increasing power and reducing the potential for biased effects (Breitsohl,

2018). The present study specifically employed a mediation SEM analysis, permitting a rigorous examination of both direct and indirect effects.

Mediation. A variable can be considered a mediator to the extent that it explains the relationship between the predictor and outcome variables. Baron and Kenny (1986) state, "mediators explain how external physical events take on internal psychological significance" (p. 1176). Drawing on this definition, the present study's mediating variables (i.e., parental mental health, parenting quality, and social support) can all be considered external events that influence internal psychological significance (i.e., youth adjustment). Conceptualizing these variables as mediators in the present study's analytic model is consistent with guiding theoretical frameworks (i.e., Family Stress Theory and Family Inequality Framework) as the effects of material hardship on child outcomes are understood to be a function of family processes in the context of parental incarceration.

Baron and Kenny (1986) propose that in order for a variable to function effectively in an SEM model, it must meet the following three conditions: (1) the independent variable must affect the mediator (2) the independent variable must affect the dependent variable and (3) the mediator must affect the dependent variable. These conditions were estimated and tested separately using regression equations (Baron & Kenny, 1986). These conditions were also met a priori as the model was identified using extant theory and literature (Baron & Kenny, 1986). In addition to relying on relevant literature and theory, the present study's model was also informed by theoretical mediation models in the SEM literature (Hayes, 2013; Preacher, Rucker, & Hayes, 2007; Sardeshmkh & Vandenberg, 2017). Utilizing SEM methods to analyze hypothesized paths was preferable to simple regression analysis as SEM accounts for measurement error within the

latent constructs which reduces the likelihood of biased parameter estimates (Sardeshmkh & Vandenberg, 2017).

Examining indirect effects through mediating constructs allows researchers to better understand how causal effects of the independent variable (i.e., material hardship) on the dependent variable (i.e., child outcomes) change as a function of mediating processes (family resilience processes) (Baron & Kenny, 1986). In the present study, examining both direct and indirect effects facilitated a deeper analysis of how each resilience process influences causal effects in the model.

SEM procedures. Prior to performing analytic procedures, the theta-epsilon, psi, beta, and lambda-y matrices were developed to conceptualize analytic procedures. Before analyzing the hypothesized full structural model (Figure 1), a measurement model was used to examine reliability of constructs and inform final specification of the full SEM model (Schreiber et al., 2006). Specifically, a confirmatory factor analysis (CFA) was performed using Mplus (Muthén & Muthén, 2019) to examine the relationship between the observed manifest indicators and corresponding latent constructs (Schreiber et al., 2006). CFA syntax is presented in Appendix A. Conducting a CFA is imperative in ensuring that latent constructs are represented and measured sufficiently by the related observed variables. Fit and modification indices from the CFA model were used to determine if the latent constructs were measured adequately by their corresponding manifest indicators.

Mplus (Muthén & Muthén, 2019) was used to preform maximum likelihood (ML) estimation, the default structural equation modeling (SEM) estimation method as multivariate normality (confirmed in data descriptions) is assumed with continuous variables and when

parameter estimates are ideal (Kline, 2016; Raykov, Tomer, & Nesselroade, 1991). SEM procedural syntax for Mplus (Muthén & Muthén, 2019) is presented in Appendix B.

Bootstrapping was used to test specific mediation effects within the model. Boostrapping is a method of repeatedly testing the model effects with sub-samples of the larger sample to specify indirect effects (Preacher et al., 2007). It is worth noting that some (Hayes, 2007; Preacher et al., 2007) have criticized Baron and Kenny's (1986) SEM steps for two reasons. First, the use of a sobel test for indirect effects is criticized for being insufficient. This was addressed by using bootstrapping, the preferred method of mediational analysis (Preacher et al., 2007). Second, the language of "full mediation" was criticized for overstating indirect effects. As such, the language of "partial or strong mediation" was used. Mplus (Muthén & Muthén, 2019) was specifically chosen as the analysis software due to its specialized ability to simultaneously test multiple mediator variables using bootstrapping methods (Sardeshmkh & Vandenberg, 2017). Further, analytic procedures described in this section were employed using Mplus (Muthén & Muthén, 2019) mediation syntax developed by Sardeshmkh and Vandenberg (2017) and Hayes (2013). Bootstrapping syntax in Mplus (Muthén & Muthén, 2019) is presented in Appendix B.

Power Analyses. A Monte Carlo simulation was used in Mplus (Muthén & Muthén, 2019) to estimate statistical power. The Monte Carlo approach (Muthen & Muthen, 2002) is an ideal power analysis to use with Mplus (Muthén & Muthén, 2019). Conducting a power analysis provides a picture of how likely it is that a research study will detect an effect when one truly exists (Kenny, 2018). The Monte Carlo approach estimates power for different hypothetical sample sizes and effect sizes by simulating data (Newsom, 2018). Using Mplus (Muthén & Muthén, 2019) Monte Carlo simulation syntax, an a priori power analysis was conducted to

ensure sufficient statistical power prior to SEM analysis. Similarly, a post-hoc power analysis was conducted to confirm sufficient statistical power of the final model. Monte Carlo simulation syntax is presented in Appendix C.

Results. Parameter estimates for the final model and structural model standardized coefficients were used to interpret and present results. Model fit indices were used to determine overall model fit with the data. The chi-square value was used to indicate the discrepancy between the predicted and actual models (Hu & Bentler, 1999). The non-normed fit index (NNFI; Bentler & Bonett, 1980; Kline, 2016) was also be used to assess model fit. The NNFI compares the differences between the baseline and target models and the differences between the baseline and expected models. Ideally the NNFI should be closer to 1, with values at or above 0.95 considered a good fit (Bentler & Bonett, 1980).

The root mean square error of approximation (RMSEA; Kline, 2016, MacCallum, Browne, & Sugawara, 1996) was also used to assess model fit. The RMSEA is a fit statistic measuring the lack of model fit to the population data (Olsson, Foss, Troye, & Howell, 2000), in which zero is the ideal value and scores ranging from 0.05 to 0.08 are considered acceptable (Kline, 2016; Steiger, 1990). Finally, the standardized root square residual (SRMR; Kline, 2016) was used to assess model goodness-of-fit. The SRMR is an important metric to assess model fit due to its sensitivity to mis-specified factor covariances (Kline, 2016), SRMR values are ideally closer to 0, with scores at or below 0.08 considered acceptable.

CHAPTER IV: RESULTS

Data Descriptives and Normality

Data were examined for univariate normality using frequencies, means, standard deviations, skewness, and kurtosis. A total of four cases were deleted listwise as these participants did not provide responses for any of the items used for analysis. Upon further examination, all four participants opted out at the beginning of the survey leaving the remainder of items unanswered. After the exclusion of these cases the sample size was slightly reduced (n = 723). All variables had less than 10% of missing data justifying the use of maximum likelihood estimation method. Bivariate correlations of variables were calculated and are represented in Table 2. Indicator variables were calculated and are represented in Table 3. The majority of correlation coefficients were statistically significant at the $p < .05$ level. Manifest indicators within the same latent construct were more strongly correlated with one another than indicators of other constructs, demonstrating that constructs were measured well by their corresponding indicators. Internal consistency among indicators was confirmed for each relevant construct using factor analysis. Covariances were also calculated and are presented in Table 4. Univariate and multivariate data normality was confirmed for the remaining variables and the overall model as indicated by skewness and kurtosis values falling within normal ranges (i.e., -2.00 - 2.00; Jöreskog & Sörbom, 1996), represented in Table 1.

Model Specification

Baron and Kenny's (1986) SEM mediation steps were used to specify the SEM model and justify analyses. For the first step, the causal variable (i.e., material hardship) was significantly correlated to the outcome variable (i.e., academic adjustment), presented in Tables 2 and 3. Further, regression analysis ($\beta = -.17$, $p < .001$) demonstrated a significant relationship of

material hardship on academic adjustment. In step two, regression paths were calculated between the predictor variable (i.e., material hardship) and mediators (i.e, social support, positive parenting, and parental mental health). Although positive parenting did not have a significant regression coefficient ($\beta = -.003$, $p = .939$), social support ($\beta = -.17$, $p < .001$) and parental mental health ($\beta = .54$, $p < .001$) both yielded non-zero relationships with material hardship. Finally, in step three, each mediator was regressed on the outcome variable (i.e., academic adjustment) controlling for the effects of the predictor variable (i.e., material hardship). Similar to step two, positive parenting yielded a non-zero regression coefficient ($\beta = -.002$, $p = .971$), whereas parental mental health ($\beta = -.323$, $p < .001$) and social support ($\beta = -.17$, $p < .001$) were non-zero and significant. Despite the lack of significance for positive parenting within the model, including this variable as a mediator was determined theoretically justified based on extant literature and the theory-driven nature of SEM analysis (Kenny, 2018). Based on Baron and Kenny's (1986) specification guidelines and the results of regression analyses, the mediational model specification was determined theoretically and quantitatively justified. Following regression analyses, a measurement model analysis was performed to further inform model specification in preparation for full structural SEM analysis.

Table 1

Description of Data

Variable	N	Mean	St. Dev.	Skewness	Kurtosis	Min.	Max.
Material Hardship							
Financial Problems	685	1.50	2.143	1.253	0.292	0	7
Basic Needs	690	0.63	1.044	1.485	0.927	0	4
Overall Financial Situation	682	2.62	0.883	0.006	-0.480	1	5
Positive Parenting							
Notice Behavior	719	4.44	0.591	-0.741	1.154	1	5
Praise Task	719	4.56	0.587	-1.190	1.956	1	5
Praise Behavior	719	4.43	0.694	-1.005	0.639	1	5
Parental Mental Health							
Anxiety	703	0.26	0.437	1.118	-0.750	0	1
Insomnia	702	0.46	0.499	0.154	-1.976	0	1
Overwhelmed	701	0.30	0.458	0.875	-1.234	0	1
Social Support							
Parents	696	3.26	1.618	-0.218	-1.563	1	5
Siblings	696	3.15	1.396	0.003	-1.315	1	5
Relatives	696	2.91	1.365	0.195	-1.209	1	5
Friends	696	3.59	1.209	-0.411	-0.885	1	5
Neighbors	696	2.69	1.185	0.562	-0.611	1	5
Youth School Adjustment							
Adjustment	689	8.40	1.829	-1.413	1.667	2	10
Concentration	712	2.19	0.701	-0.273	-0.956	1	3
Social Inclusion	712	5.30	1.114	-1.531	1.390	2	6

Table 2

Variable Correlation Matrix

	1	2	3	4	5
Material Hardship	1.00				
Positive Parenting	.637**	1.00			
Parental Mental Health	.644**	.564**	1.00		
Social Support	.566**	.500**	.902**	1.00	
Academic Adjustment	.491**	.44**	.794**	.880**	1.00

Table 3

Indicator Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Fin. Prob	1.00																
Basic Needs	.513**	1.00															
Overall Fin	.527**	.346**	1.00														
Notice Beh	-.010	.009	.001	1.00													
Praise Task	-.003	.052	-.002	.566*	1.00												
Praise Beh	-.034	.084*	-.026	.512*	.710**	1.00											
Anxiety	.302**	.183**	.272**	-.020	-.003	-.065	1.00										
Insomnia	.216**	.123**	.241**	-.019	.039	.015	.353**	1.00									
Overwhelm	.299**	.216**	.321**	-.072	-.081*	-.091*	.414**	.418**	1.00								
Parents	.008	-.036	-.001	-.031	.069	.027	-.047	-.004	.036	1.00							
Siblings	-.007	-.009	-.089*	-.013	.007	.031	-.106**	-.071	-.028	.422**	1.00						
Relatives	-.124**	-.080*	-.145**	-.020	.002	-.004	-.079*	-.153**	-.095*	.318**	.307**	1.000					
Friends	-.065	-.085*	-.045	.067	.059	.069	-.110**	-.073	-.043	.229**	.330**	.358**	1.00				
Neighbors	-.156**	-.117**	-.163**	.040	.056	.063	-.123**	-.111**	-.102**	.119**	.219**	.306**	.452**	1.00			
Acad. Adj	.111**	-.054	-.113**	.029	.120**	.130**	-.098*	-.118**	-.153**	.40	.002	.051	.098*	.080*	1.00		
Concentra	-.063**	-.025	-.050	.059	.084*	.134**	-.0777*	-.168**	-.194**	.000	.006	.039	.047	.070	.501**	1.00	
Social Incl	-.146**	-.133**	-.117**	-.049	.006	-.029	-.171**	-.101**	-.128**	.028	.053	.066	.050	.015	.379**	.338**	1.00

Table 4

Covariance Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Fin. Prob	4.575																
Basic Needs	1.142	1.089															
Overall Fin	.988	.316	.776														
Notice Behav	-.008	.007	.002	.349													
Praise Task	-.002	.032	.000	.196	.344												
Praise Behav	-.046	.061	-.014	.210	.289	.481											
Anxiety	.280	.083	.104	-.005	-.001	-.019	.190										
Insomnia	.228	.064	.104	-.005	.011	.005	.077	.249									
Overwhelm	.288	.102	.127	-.019	-.022	-.028	.083	.096	.210								
Parents	.030	-.059	-.005	-.029	.066	.030	-.033	-.004	.026	2.615							
Siblings	-.013	-.012	-.107	-.010	.006	.030	-.064	-.050	-.018	.952	1.947						
Relatives	-.355	-.113	-.171	-.017	.001	-.005	-.047	-.104	-.059	.702	.584	1.860					
Friends	-.165	-.106	-.049	.047	.041	.057	-.058	-.044	-.024	.447	.556	.590	1.460				
Neighbors	-.387	-.143	-.169	.028	.039	.050	-.063	-.065	-.055	.229	.363	.494	.647	1.403			
Acad Adjust	-.457	-.108	-.189	.034	.125	.167	-.087	-.114	-.130	.095	.010	.144	.199	.179	3.348		
Concentration	-.095	-.020	-.030	.023	.033	.063	-.024	-.059	-.063	.001	.006	.038	.041	.059	.655	.494	
Social Inclus	-.347	-.154	-.115	-.035	.002	-.025	-.083	-.057	-.067	.051	.082	.101	.068	.022	.781	.269	1.246

Measurement Model

The initial hypothesized model is shown in Figure 1. A confirmatory factor analysis (CFA) was conducted to examine how well each construct was measured by its respective manifest indicators. Mplus (Muthén & Muthén, 2019) CFA results are presented in Appendix A. The measurement model demonstrated an overall good fit to the data based on the model fit indices. Specifically, the chi-square value (χ^2= 264.026, p = .0000, df = 109; Hu & Bentler, 1999), RMSEA (0.04; Kline, 2016; MacCallum, Browne, & Sugawara, 1996), CFI (0.94; Hu & Bentler, 1999), TLI (0.92; Hu & Bentler, 1999), and SRMR (0.04; Hu & Bentler, 1999) were all within acceptable ranges, indicating the hypothesized model was measured adequately. However, modification indices did indicate minor issues with measurement of some constructs. Two of the original five Parental mental health items (i.e., chest pain and body aches) did not add to the overall measurement of the construct and were removed. The remaining items within this construct were anxiety, insomnia, and overwhelmed; all measured by individual survey items. Further, modification indices indicated that the construct Social support would be better measured if items were not summed as represented in the hypothesized model (Figure 1). Consequently, the summed indicators (i.e., community, family, and school support) were ungrouped and re-organized to stand-alone items; specifically, support from respondents': parents, siblings, general relatives, friends, and neighbors. Each of these indicators is represented by a single item inquiring about the frequency in which respondents are able to receive support from these individuals. Similarly, modification indices indicated that although the Financial problems and Basic needs indicators measured the construct Material hardship well, modification indices suggested that a single item (i.e., How do you assess your family's overall financial situation?) measured the construct better as a stand-alone item rather than

summed with Financial problems. Consequently, this single item was removed from Financial problems and was placed as a stand-alone indicator, represented as Overall financial situation. The remainder of the hypothesized model remained in its original form. The full SEM model, informed by measurement model modification indices, is represented in Figure 2.

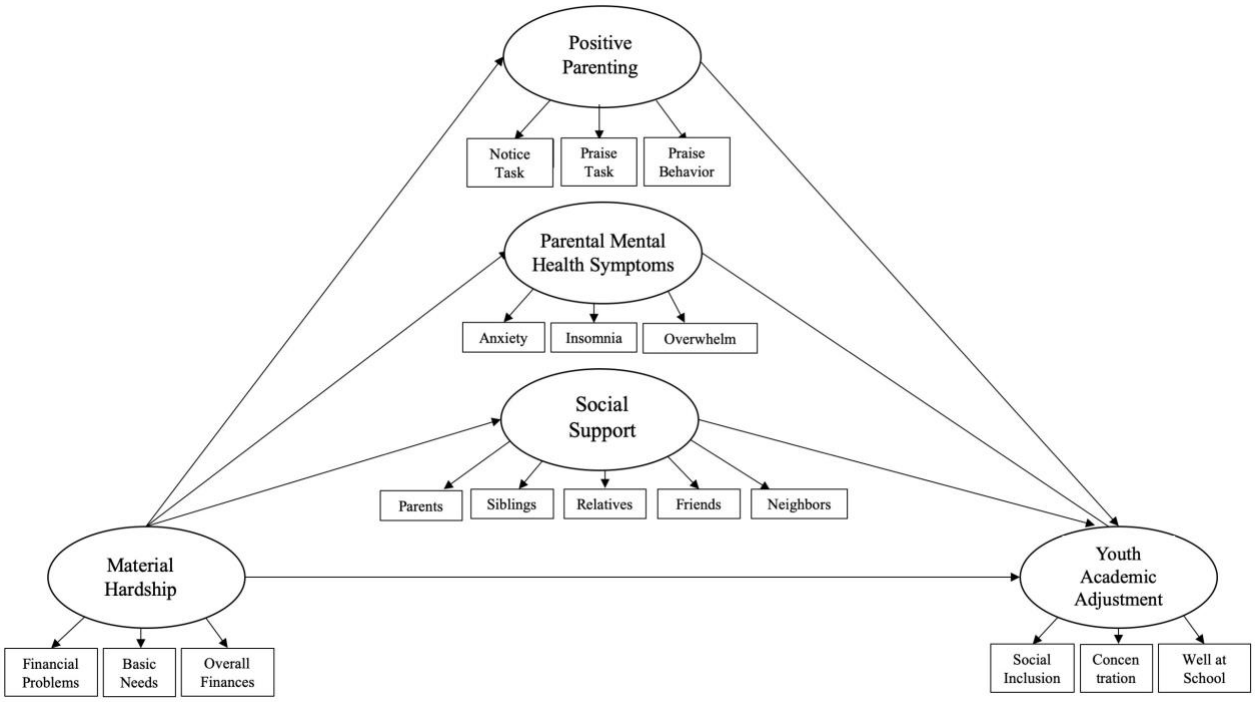

Figure 2. Structural Equation Analytical Model

Power Analysis

Monto Carlo simulations were employed in Mplus (Muthén & Muthén, 2019) statistical software to examine statistical power. Power is considered acceptable at the value of .80 and above (Newsom, 2018). A priori power results indicated that the statistical power for the study sample size (n = 723) would be 1.00 for detecting direct effects and associated indirect effects for both large main effect sizes (.50) and medium main effect sizes (.30). However, for small

main effect sizes (.1) there would be insufficient power to detect direct effects (.65-.60) and associated indirect effects (.19-.16). A priori power analyses are presented in Appendix C.

Structural Model Results

The final structural model with standardized path coefficients is represented in Figure 3, with parameter estimates for the model presented in Table 5 and standardized coefficients presented in Table 6. Standardized coefficients were used to scale construct values using a metric that is more easily interpreted. SEM Mplus (Muthén & Muthén, 2019) syntax and results are presented in Appendix B.

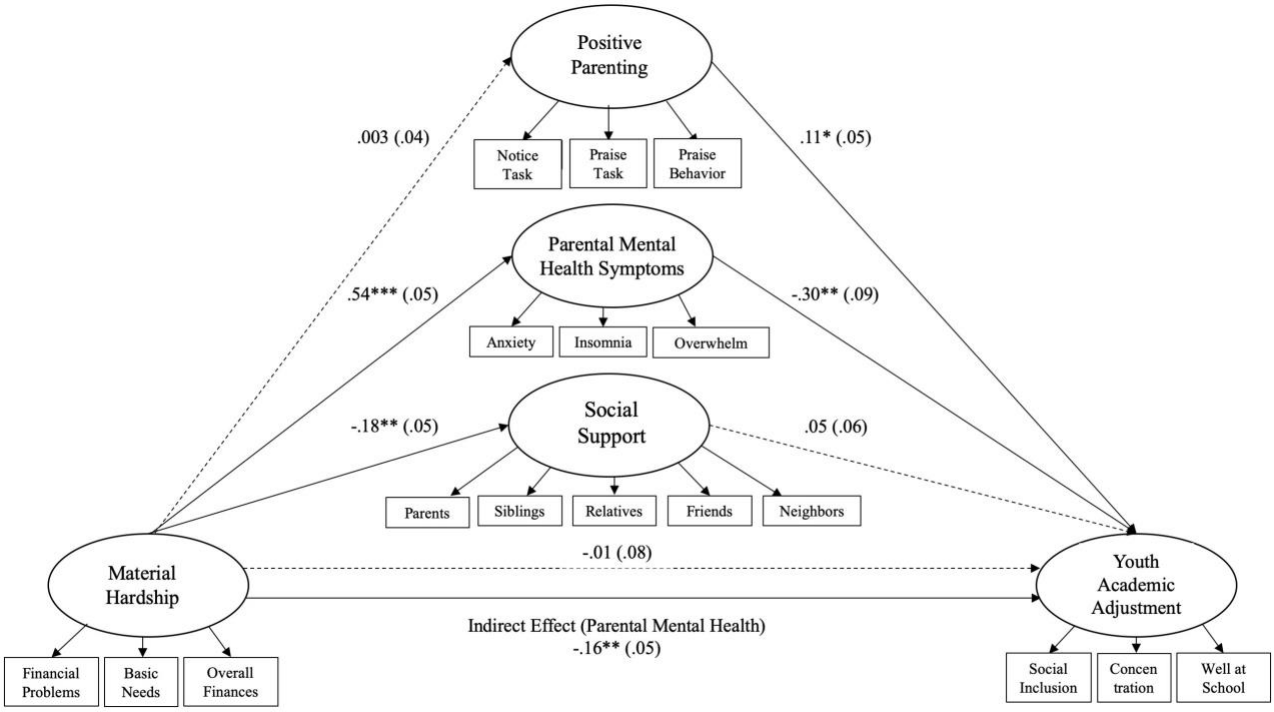

Figure 3. Final Structural Equation Analytical Model Results

* p < .05 level, ** p < .01 level, *** the p < .001 level

Fit indices. Fit indices, which provide indicators of how well the data fit the model (Bentler, 1990), indicated an overall acceptable fit of the final structural model. Although the

chi-square value (χ^2= 266.652, p = .000, df = 109; Hu & Bentler, 1999) was acceptable per the general guideline of a 3:1 chi-square value to degrees of freedom ratio (Hoyle & Panter, 1995), the chi-square value was significant, potentially indicating poor model fit, however, significance of the chi-square statistic can be explained by the large sample size (Hooper, Coughlan, & Mullen, 2008). The RMSEA (0.04; Kline, 2016; MacCallum, Browne, & Sugawara, 1996) indicated a good fit per the general rule that well-fitting models have an RMSEA value of < 0.05, while models considered an acceptable fit have values between 0.05 and 0.08 (Hu & Bentler, 1999). The CFI (0.94; Hu & Bentler, 1999) and TLI (0.92; Hu & Bentler, 1999) also indicated an acceptable fit per the criteria that values be above 0.90, with preference above 0.95. Finally, the SRMR value (0.04; Hu & Bentler, 1999) was excellent, falling far below the generally accepted cutoff of 0.08. Except for the chi-square significance, which can be explained by the large sample size (Hooper et al., 2008), all indicators of model fit were within acceptable limits.

Direct effects. The final model indicated a number of significant pathways among latent constructs, presented in Figure 3 as well as Tables 5 and 6. Material hardship yielded direct positive effects on parental mental health ($\beta = .54$, $p < .001$) with higher levels of material hardship resulting in increased levels of mental health symptomology issues for caregivers. Further, material hardship had direct positive effects on social support ($\beta = -.178$, $p < .001$) indicating that a severer degree of material hardship predicted lower overall social support from respondents' parents, siblings, other relatives, friends, and neighbors. Conversely, material hardship did not have a significant effect on neither youth academic adjustment ($\beta = -.014$, $p = .861$) nor on respondents' positive parenting ($\beta = .003$, $p = .952$). Parental mental health symptomology had a significant direct negative effect ($\beta = -.301$, $p < .001$) on youth academic adjustment indicating that higher levels of parental mental health symptomology were associated

with lower levels of academic adjustment. Further, positive parenting had a significant direct positive effect ($\beta = .115$, $p < .05$) on youth academic adjustment, suggesting that the parenting practice of noticing, encouraging, and praising good behavior predicted better overall academic adjustment. Respondent social support did not have a significant direct effect ($\beta = .051$, $p = .394$) on youth academic adjustment. Parental mental health was the only variable to have a significant direct effect beetween both the exogenous (i.e., material hardship) and to the endogenous (i.e., youth academic adjustment) variables.

Indirect effects. Of the three mediating variables, positive parenting, parental mental health, and social support, there was considerable variation in the degree to which these variables interacted with the direct effect of material hardship on youth academic adjustment. Parental mental health strongly mediated the relationship between material hardship on youth academic adjustment whereas positive parenting and social support did not mediate at all. Specifically, neither positive parenting ($\beta = .000$, $p = .956$) nor social support ($\beta = -.009$, $p = .419$) demonstrated significant indirect effects within the final model. The most noteworthy finding was the highly significant indirect negative effect ($\beta = -.164$, $p < .01$) parental mental health symptomology had on the relationship between material hardship and youth academic adjustment. Indeed, despite an insignificant direct effect of material hardship on youth academic adjustment, results demonstrated that this relationship becomes significant to the degree that respondents endorsed mental health symptoms such as anxiety, insomnia, and a general feeling of being overwhelmed. This finding demonstrated that parental mental health symptoms strongly

mediated the relationship between material hardship and youth academic adjustment within the overall structural model.

Post-Hoc Power Analysis. A Monte Carlo simulation was used to conduct a post-hoc power analysis. A post-hoc power analysis was employed to confirm sufficient statistical power needed within the model to accurately detect effects. Results for the full structural model indicated strong statistical power for all non-zero direct effects (1.00 - .94), except for the direct effect between positive parenting and academic adjustment (.69). Further, results for the full structural model indicated strong statistical power for both the sum of indirect effects (.99) and indirect effects of parental mental health (.99); statistical power for the indirect effects of positive parenting (0.01) and social support (0.07) were very low, which can be explained by the indirect effect sizes being zero. Monte Carlo post-hoc simulation results indicated that increasing the sample size to 5,000 yielded the same results with no noticeable differences in power levels for the direct effects and indirect effects that were trivial in magnitude or zero. Further, a post-hoc power analysis was conducted to determine if the study would have better statistical power as a path analysis rather than an SEM model; results indicated that power increased only marginally. Post-hoc power analysis findings are presented in Appendix C.

Table 5

Parameter Estimates for the Final Model

	Maximum Likelihood Estimates	t-score value*	SE	Standardized Estimates**	R_2***
Material Hardship					
Financial Problems	1.000	--	--	0.830	0.689
Basic Needs	0.348	13.136	0.027	0.593	0.351
Overall Financial Situation	0.318	11.321	0.028	0.640	0.409
Positive Parenting					
Notice Behavior	1.00	--	--	0.638	0.407
Praise Task	1.374	13.997	0.098	0.883	0.779
Praise Behavior	1.481	13.706	0.108	0.805	0.647
Parental Mental Health					
Anxiety	1.000	--	--	0.607	0.368
Insomnia	1.088	9.862	0.110	0.578	0.334
Overwhelm	1.216	9.569	0.127	0.703	0.494
Social Support					
Parents	1.000	--	--	0.451	0.204
Siblings	1.036	10.611	0.098	0.542	0.293
Relatives	1.090	7.677	0.142	0.583	0.340
Friends	1.078	5.394	0.200	0.651	0.424
Neighbors	0.874	4.879	0.179	0.539	0.290
Youth Academic Adjustment					
Academic Adjust	1.000	--	--	0.748	0.559
Concentration	0.349	8.913	0.039	0.680	0.463
Social Inclusion	0.415	9.097	0.046	0.510	0.260

*All t-scores greater than 1.96 indicate significance
**Standardized estimates closer to 0.9 are better
***R_2 estimates above than 0.3 are preferred

Table 6

Structural Model Standardized Coefficients

	R_2 (Structural)	Direct coefficients	Direct t-score*	Indirect coefficients	Indirect t-score*
Material Hardship					
Positive Parenting		0.003	-0.195	0.000	0.055
Parental Mental Health		0.544	10.622	-0.164	-3.082
Social Support		-0.178	-3.365	-0.009	-0.808
Youth Academic Adjustment		-0.014	-0.175		
Positive Parenting	0.000				
Material Hardship					
Parental Mental Health					
Social Support					
Youth Academic Adjustment		0.115	2.277		
Parental Mental Health	0.296				
Material Hardship					
Positive Parenting					
Social Support					
Youth Academic Adjustment		-0.301	-3.458		
Social Support	0.032				
Material Hardship					
Positive Parenting					
Parental Mental Health					
Youth Academic Adjustment		0.051	0.852		
Youth Academic Adjustment	0.123				
Positive Parenting					
Parental Mental Health					
Social Support					

*All t-scores greater than 1.96 indicate significance

CHAPTER V: DISCUSSION

Nearly half of all youth with an incarcerated parent are adolescents (Johnson & Arditti, in preparation). Although much of the existing research focuses on young children, the present study examined the role of mediating resilience processes for families with youth experiencing parental incarceration. Examining the mediating role of specific resilience processes is important for both family-level prevention and intervention implications, as well as shifting the parental incarceration literature from deficit based between-groups comparison to resiliency based within-groups analysis (Arditti & Johnson, under review). Overall, the results of these analyses suggest that parental mental health processes play important roles in mitigating adverse outcomes for families experiencing material hardship and parental incarceration. The roles of material hardship and family resilience processes examined in the present study are discussed below.

Material Hardship

Consistent with Family Stress Theory (Hill, 1949; Patterson, 1988; 2002) and the Family Inequality Framework (Arditti, 2018), findings from the present study support the idea that existing stressors such as material hardship predict family level outcomes. In the present study, simple regression analyses used for model specification demonstrated that material hardship significantly predicted levels of youth academic adjustment. The significance of material hardship within this population is consistent with the social causation perspective, which is the assumption that health and well-being outcomes are dependent on social and economic conditions (Conger et al., 2010). Indeed, poverty is a predictor of carceral experiences. In this way, material hardship appears to disproportionately plague justice involved families (Arditti, 2018). Consequently, material hardship may chip away at family resources and resilience processes, ultimately resulting in poor family and child outcomes. Based on the theoretical

Family Inequality Framework (Arditti, 2018), material hardship is conceptualized as the "main conduit" for exacerbating family and child inequality, such as social exclusion, financial instability, academic opportunities, and health and well-being to name a few. Findings from the present study demonstrate that material hardship does appear to negatively impact both family resilience processes (i.e., parental mental health and social support) as well as youth academic adjustment. These findings support the Family Inequality Framework (Arditti, 2018) in that during parental incarceration, material hardship appears to be the main conduit to worsening family level processes and outcomes. Further, findings support the idea that this relationship is impacted by family-level resilience processes.

Consistent with Family Stress Theory (Hill, 1949; Patterson, 1988; 2002), the present study supports the theoretical concept that material hardship is seen as an existing stressor (i.e., "Aa"), which both influences and is influenced by family resources and resilience processes (i.e., "Bb"), which in turn influences child and family level outcomes (i.e., "Xx"). For justice involved families, material hardship is often a pre-existing condition that both predicts and is worsened by parental incarceration (Arditti, 2018). The present study demonstrates that during parental incarceration, material hardship has a negative relationship with youth school adjustment, yet the strength of this relationship varies based on the presence of family resilience processes. In this way, the present study offers empirical support for Family Stress Theory (Hill, 1949; Patterson, 1988; 2002) and in particular, the Family Inequality Framework (Arditti, 2018). Key mechanisms of effect within the present study were the mediating role of family resilience processes, which appear to mitigate the effects of material hardship in varying degrees and offer intriguing opportunities for future research.

Positive Parenting

Results indicate that the quality of caregiver parenting skills did not mediate the relationship of material hardship on youth academic adjustment. Interestingly, despite a lack of mediation, there was a significant positive direct effect in that higher levels of positive parenting skills significantly predicted better overall academic adjustment. Further, the direct effect of material hardship on positive parenting skills did not reach significance. Previous research has indicated that, in the context of parental incarceration, material hardship is related to more harmful forms of parenting that rely on authoritarian practices (Turney, 2014). Consistent with Conger's (2010) work on economic hardship impacting children through parents, this finding may be due to higher levels of economic and psychological stress when one parent is suddenly incarcerated and the parent-at-home has to adjust to increased roles and responsibilities with less support (Turney, 2014).

However, lack of significance between material hardship and positive parenting may indeed still be a sign of resilience. Indeed, although it is logical that stress associated with material hardship and cumulative disadvantage might inform the quality of one's parenting (Arditti, Burton, & Neeves-Botelho, 2010), a lack of causal significance may indicate that some parents are able to maintain positive parenting skills despite added contextual stressors such as parental incarceration and material hardship. Using a within-group analysis, Turney and Wildeman (2013) found that paternal incarceration was associated with increased engagement (i.e., positive parenting) between mothers and their children. It may be too simplistic to categorize parenting practices as "good" or "bad" during parental incarceration. In reality, parenting practices are likely far more complex and nuanced. For example, Arditti et al. (2010) found that while more than half the mothers in the study displayed harsh parenting practices,

many also demonstrated care and advocacy practices. Together, these findings suggest that positive parenting scenarios may be possible in conjunction with material hardship that often plagues justice involved families. Turney and Wildeman's (2013) study also supports the call by some scholars for increased within-group analyses in parental incarceration research in order to better identify the nuanced parenting characteristics of these families (Arditti & Johnson, under review).

Further, it is imperative to interpret these findings in context. American parenting practices are sometimes characterized as focusing on obedience and relying on authoritarian practices (Alexander & Sandahl, 2016). In contrast, parenting practices in Denmark emphasizes a "whole-child" approach that emphasizes autonomy, healthy attachments, and self-esteem (Alexander & Sandahl, 2016). Conger's (2010) work helps us understand how in an American context parenting practices, which can vary significantly, may mediate the effects of economic hardship processes on child outcomes in family contexts. However, healthy pro-social parenting practices that focus on the "whole child", as is typical in Denmark, may be so socioculturally embedded and behaviorally engrained that stressors (e.g., material hardship) are less likely to impact parenting behaviors and, in turn, parenting practices may be less likely to strongly mediate child outcomes. In this way, parenting practices in the Danish context may promote family resilience while also being somewhat impervious to family-level stressors. Further research in this area is needed in order to understand the role parenting practices may play in family resilience processes.

Findings from the present within-group study demonstrate that parenting practices may indeed remain unchanged, or even improve, in spite of material hardship conditions. While the present study does not confirm this link, it is imperative that we conduct further family resilience

process research with lower socio-economic status families in order to continue identifying strengths (Vanderbilt-Adriance & Shaw, 2008), with a particular focus on cultural context of parenting practices. Future within-group parental incarceration research examining this phenomenon may help scholars better understand how parents are able to maintain parenting skills in spite of the additional stressors that are often inherent to parental incarceration.

Social Support

Similar to positive parenting, social support did not appear to yield any mediation effects on the relationship between material hardship and academic adjustment. However, analyses did yield noteworthy direct effects. First, social support had no significant relationship on youth academic adjustment. However, results indicate a significant negative relationship between material hardship and social support. Indeed, it appears that higher degrees of material hardship significantly predict lower levels of social support. Some scholars have conceptualized social support as only available to the degree that there are clear exchanges of support within a network and these reciprocities make sense for families exchanging support (Stack, 1974). Indeed, Stack (1974) proposed that families experiencing severe and persistent material and economic hardship establish, "extensive networks of kin and friends supporting, reinforcing each other- devising schemes for self-help, strategies for survival in a community of severe economic deprivation" (p. 28). Stack (1974) emphasizes that this network of social support is meant not to escape poverty, as this is considered near impossible on welfare benefits alone, but to help one another survive in the face of material hardship. Further, social support is conceptualized as only being available in a quid pro quo state; to the degree that the receiving party also has something to give either immediately or later on (Stack, 1974). Further, social support is seen as available depending on the number of immediate people within one's kinship network (Stack, 1974). This seminal work

may explain why increased levels of material hardship result in significantly lower levels of social support. In this way, material hardship may reduce a caregivers' ability to "give" support, thereby isolating caregivers and limiting the degree to which they are able to receive social support. Meanwhile, an incarcerated parent may mean further loss in material resources (i.e., income) and social commodities. Taken together, these experiences may explain why, in the present study, material hardship was found to predict lower levels of social support. From a Family Stress Theory perspective, families are able navigate crises into bonadaptation depending on the degree of available resources. These findings highlight how a crisis (i.e., parental incarceration) in low-resource (i.e., material hardship) families may interact to result in even lower social support. This process begs the question, how do families manage to persevere despite diminished social support? Stack (1974) hypothesizes that these families rarely reach bonadaptation and instead adjust to crisis as the new normal by developing extended kinship networks and resource sharing. It is noteworthy that despite the significant negative effect material hardship has on social support, there is no significant effect of caregivers' social support on youth academic adjustment. This warrants further exploration and indeed may be a sign of resilience if parents and/or caregivers are able to prevent social support status from impacting youth adjustment in school. Although not statistically explanatory of youth school adjustment, the relationship between material hardship and social support is concerning given the stigma and challenges typically associated with justice involvement (i.e., social exclusion) and warrant further empirical exploration to better understand how these constructs contribute to child and family inequality.

Parental Mental Health

Perhaps the most noteworthy finding in the present study is both the direct effects, as well as the mediating role of parental mental health symptoms in the relationship between material hardship and academic adjustment. It is important to note that parental mental health (i.e., symptomology) was not measured using a methodological "gold standard" assessment (e.g., Beck Depression Inventory) but instead relied on self-report of general symptoms (e.g., anxiety) that are indicative of mental health symptomology. Despite the general construct measurement, results indicated that parental mental health symptoms was measured well as a construct by corresponding symptomology indicators. Material hardship was found to significantly predict parental mental health symptoms, indicating that higher levels of material hardship yielded a higher prevalence of mental health symptomology for caregiver respondents. This finding is highly consistent with Family Stress Theory (Hill, 1949; Patterson, 1988; 2002) and Conger's (2010) work on economic hardship in which material hardship is conceptualized as a predictor of stress and poor health outcomes.

Further, parental mental health symptomology had a significant negative relationship with youth academic adjustment, indicating that higher levels of caregiver-respondent mental health symptoms significantly predicted worse youth academic adjustment. Further, findings indicate that parental mental health symptomology strongly mediates the relationship material hardship has on predicting youth academic adjustment. This finding is very interesting considering that the direct effect of material hardship on youth academic adjustment was not significant within the overall model. However, this relationship became significant as a result of the parental mental health variable. A lack of a significant direct effect of material hardship on youth academic adjustment could be an indicator of resilience in that, somehow, families are

potentially able to mitigate the effects material hardship have on a youth's well-being at school. However, this changes to the degree that caregivers experience parental mental health symptoms. This finding is significant for a few reasons. First, this study is the first to provide preliminary confirmation of the significant role caregiver mental health can play for families experiencing material hardship in the context of paternal incarceration. Second, it is noteworthy that the direct effect of material hardship on youth academic adjustment was not significant unless parental mental health problems were endorsed by the caregiver-respondent. This finding suggests that youth academic adjustment is negatively impacted to the degree that material hardship and parental mental health is more severe. This finding is consistent with Family Stress Theory (Hill 1949; Patterson, 1988; 2002) and the Family Inequality Framework (Arditti, 2018), in which material hardship as a stressor and key mechanism of effect yield a more significant effect on youth academic adjustment when resources and resilience processes are lacking. Further, these findings highlight an important area of intervention. Namely, identifying and addressing both economic stressors as well as caregiver-respondent mental health symptoms may indeed promote family-level resilience and mitigate academic maladjustment for youth experiencing paternal incarceration.

Some scholars argue that mediation in structural equation modeling can only occur when the direct effects are first significant (Baron & Kenny, 1986). In the present study, this prerequisite would require material hardship to have a direct effect on youth academic adjustment in order for parental mental health to sufficiently be considered a mediating variable. However, Kenny (2018) disputes this requirement, stating that in some instances a direct effect may not be significant although an indirect mediating effect may still occur. Specifically, scholars argue that the most important steps in establishing mediation are the following: (1) the

predictor variable is correlated with the mediator, and (2) the mediator effects the outcome variable (Kenny, 2018; Kenny, Kashy, & Bolger, 1998). In the present analysis, these requirements were satisfied. Further, an additional strength of the present study is that Mplus (Muthén & Muthén, 2019) was used to conduct analyses, which allowed for simultaneous testing of multiple mediators through bootstrapping (Kenny, 2018).

Implications

Theoretical. This study was the first to empirically test the Family Inequality Framework (Arditti, 2018). Findings preliminarily confirm that caregiver factors do indeed play a mediating role between material hardship and youth developmental outcomes. Specifically, results indicate that caregiver factors of the at-home parent do, to varying degrees, mediate the effects of material hardship during parental incarceration through the mental wellbeing of the at-home parent. In particular, parental mental health symptomology can dramatically exacerbate the effects of material hardship on child developmental outcomes. Although results demonstrated that parental mental health symptoms are a strong mediator, parental mental health as a construct was only generally assessed. To better understand this mediational process it is imperative that we better understand this variable. Future theoretical testing of the Family Inequality Framework (Arditti, 2018) should include more robustly measured indicators of parental mental health, with specific attention to wellness indicators (e.g., Parental Stress Index) and resilience. Despite only a general measurement of parental mental health symptoms this variable still strongly mediated the effects of material hardship on youth academic adjustment. Consequently, based on the

present findings, I recommend that parental mental health be added as a formative mediating variable within the Family Inequality Framework (Arditti, 2018).

Further, although positive parenting yielded no significant findings in the present study, existing research indicates that parenting may remain unchanged, or even improve, during parental incarceration (Turney & Wildeman, 2013). Historically, our understanding of parenting practices during parental incarceration has been largely dependent on between-groups comparisons (Johnson & Easterling, 2012), potentially missing the parenting nuances that a within-group analysis could detect. Given that parental incarceration is generally associated with negative child outcomes with the exception of removing a violent parent (Hagan & Dinovitzer, 1999), it is logical that parenting structure and practices are an important family proximal process during parental incarceration. It is clear that further research is needed to empirically verify the role and effects of parenting processes during parental incarceration. Future research should include robust measures of parenting (e.g., Parental Stress Index) and specific parenting behaviors (e.g., parental discipline, monitoring, beliefs, etc) in relation to child outcomes that, according to the parenting literature, constitutes parenting quality (Besimer & Dennison, 2018; Hoeve et al., 2008; Turney, 2014).

Further, although not a mediating process, social support appeared to play an important role in families of the present study. Specifically, social support as a protective factor appeared to diminish as a result of material hardship. It is possible that social support may have played a stronger mediating role if measured differently. In the present study, social support was measured by type (e.g., family, friends, etc.) and frequency (i.e., never, sometimes, frequently, always). More precise measurement of this variable would provider a clearer picture of the protective role social support plays in families navigating material hardship during parental

incarceration. For instance, future research should inquire about the type and frequency of social support prior to parental incarceration in order to draw stronger conclusions about the role social support plays in families with an incarcerated parent. Further, material hardship appeared to predict lower levels of social support which raises the question; does the interaction between parental incarceration and material hardship cause lower levels of social support? If so, this may support earlier work demonstrating that families experiencing material hardship may only have support available to them in a reciprocal manner, to the degree they are able to provide support to others (Stack, 1974). Research exploring this question would help inform the role of social support in the Family Inequality Framework (Arditti, 2018).

Findings in the present study are an important step in the next wave of research examining family level processes during parental incarceration. Of note, this framework, and the present study, examine how economic inequity both influences, and is influenced by, parental incarceration and how families navigate these experiences. Future research should examine additional variables as mediating factors, such as family stability and parenting quality from a within-groups family resilience perspective.

Clinical. The only mediator in the present study was the mental health of the at-home parent serving as the primary caregiver. To the degree that respondents endorsed feelings of anxiety, insomnia, and overwhelm, the effects of material hardship on youth academic adjustment worsened. These findings suggest that perhaps the most profound area of intervention is providing clinical support to those serving as primary caregivers during parental incarceration. Specifically, based on the findings of this study, clinical interventions that aim to reduce anxiety, depression, and feelings of overwhelm may mitigate the apparent adverse effects that parental mental health can have on youth outcomes during parental incarceration and material hardship.

However, despite the strength of the mediating role parental mental health demonstrated in this study, indicators only measured general experiences of mental health symptomology. In order to clearly inform appropriate clinical interventions it is first necessary to establish more precise measurement of the type of mental health symptoms that plague families experiencing parental incarceration in conjunction with material hardship. In particular, it would be useful to measure exact symptomology using established standardized mental health measures, as well as onset, frequency, intensity, and duration of symptoms. Research exploring these variables would more clearly elucidate the role parental mental health has on child and family outcomes during parental incarceration. Further, this type of research could serve as the foundation for clinical research (e.g., randomized controlled trials) examining the effectiveness of certain established family therapy modalities on reducing parental mental health symptomology and improving overall child and family outcomes.

Policy. Families of incarcerated persons are often referred to as secondary prisoners or forgotten victims (Codd, 2008). Many families suffer, often in silence, as a result of their loved one's incarceration. Codd (2008) states, "If we are to adopt critical perspectives which challenge power differentials then caring about prisoners' families is entirely merited and indeed necessary" (p. 41). In order to develop responsible policy for families of incarcerated persons there must be strong research highlighting areas of risk and resilience during parental incarceration. Although this study was conducted with a Danish sample, findings in the present study may inform general family and incarceration policy.

Scholars in the parental and family incarceration literature frequently discuss both the risk and resilience factors that either keep families experiencing cumulative disadvantage or help boost families out of these patterns. There is a plethora of research demonstrating the

ineffectiveness of some U.S. incarceration policies such as the "three strikes law" (Clear & Frost, 2013), which contributed to mass incarceration and racial disparities in carceral settings (NAACP, 2018), and the welfare benefits ban for anyone with a felony charge under the Personal Responsibility and Work Opportunity Act of 1995 (PRWORA; Pub. L. 104-193) that appeared to make it difficult for families trying to escape the cycle of material hardship and parental incarceration (Mauer & McCalmont, 2013). Consistent with Family Stress Theory (Hill, 1949; Patterson, 1988; 2002) and the Family Inequality Framework (Arditti, 2018), parental incarceration is an on-going stressor that exacerbates economic and social cumulative disadvantages for incarcerated persons and their families (Arditti, 2012; 2016) and results in "secondary prisonization" (Arditti, 2012; Comfort, 2008). A plethora of research has examined the cumulative disadvantage, risk factors, and ineffective policies in parental incarceration (Arditti, 2012; Loper et al., 2015). However, there is significantly less research on policies that promote resilience in parental incarceration (Arditti, 2012). This begs the question, what policies do or do not promote resilience and successful familial adaption in the context of parental incarceration? The present study offers intriguing suggestions for policies that may promote resilience. Given that material hardship in the context of parental incarceration is seen as a "main conduit" (Arditti, 2018) child and family inequality, which findings in the present study support, it seems that policies promoting economic stability for families with an incarcerated parent is a logical first step. Additionally, for families experiencing parental incarceration it appears that addressing the mental health of the at-home primary caregiver may bolster family resilience and, consequently, youth outcomes. Policies providing mental health funding and resources to families with an incarcerated parent may help mitigate inherent risks, especially to families with existing material hardship that may have inadequate health and mental health care coverage.

Further, although social support demonstrated less of a mediating role than parental mental health, it is significant that material hardship during parental incarceration appears to result in reduced social support. Policy aimed at bolstering social support, such as peer support services and community support, may address the diminished social support that families facing material hardship and parental incarceration often experience.

Limitations and Future Research

The primary limitation in the present study is the reliance on secondary data analysis. While the analytic model was informed by extant theory and literature, the model was somewhat constrained by the items available in the original survey data source. Because this study aimed to provide a preliminary empirical testing of the Family Inequality Framework, it would have been ideal to include variables such as family instability and protective factors, as well as more comprehensive parenting, mental health, and youth outcome measures. However, we were limited in our ability to measure these constructs due to data availability. Similarly, many survey items were dichotomous (i.e., "yes"/"no" answers), constraining the degree of variability in the analysis. This was addressed by summing indicators within the same construct so that each response value became a scale. For example, financial problems was comprised of four dichotomous items in which each "yes" answer was assigned a value of 1 while each "no" answer was assigned a value of 0, thereby making the possible scores range from 0-4 under Financial problems, with a higher value indicating a higher degree of financial hardship. Future research would benefit from increased variability (i.e., likert-scale responses) to better capture the nuances of these variables. Additionally, we were not able to acquire important demographic level such as income level, employment, paternal carceral sentence length, etc., that might provide important group-level information. Further, the survey relied on self-report as the

primary method of data collection. Although this gave voice to respondents, relying solely on self-report indicators may compromise internal validity. Future research should expand on the present study by incorporating data triangulation methods such as “gold standard” assessments (e.g., Beck Depression Inventory), as well as in-depth qualitative interviews to produce thick descriptions of these phenomena.

The original survey was originally constructed in Danish. Prior to data analysis, the survey was translated from Danish to English by a bi-lingual research employed by the primary data source (i.e., Danish Center for Social Science Research). It is possible that slight dialectical translation errors occurred and/or were not identified and resolved. For example, an item inquiring about sources of Social support was initially translated as “colleagues”, but the discrepancy was later identified and determined to actually mean “friends”. Further, an item inquiring about caregiver-respondent mental health symptoms was initially translated as “chest pain” but was later determined to mean “heartache/sadness”. While we attempted to identify and resolve these translation errors to the best of our ability, it is possible that discrepancies were missed as a result of dialect nuances.

Despite these limitations, data of these kind rarely exists, and the present analysis is an important first step in the next wave of parental incarceration research examining risk and resilience from a family perspective. Multiple implications for future research exist. First, although the indirect effect was approaching significance it was surprising to find that Social support was not identified as a mediating resilience process. Future research should examine this relationship more closely, perhaps identifying better ways to measure social support as a construct. Additionally, caregiver-respondent mental health was identified as a crucial resilience process. Future research should attempt to confirm, and expand on these findings; identifying

precise ways in which parental mental health can promote risk and/or resilience in families impacted by paternal incarceration. Furthermore, it is possible that a few non-significant direct effects (i.e., material hardship on parenting skills and social support on youth academic adjustment) are actually represent the presence of resilience, highlighting the potential for caregivers to prevent adverse experiences from impacting youth academic adjustment. It is unclear the degree to which these relationships are, or are not, indicative of resilience processes. Future research should examine these effects more closely to identify how these components of the Family Inequality Framework (Arditti, 2018) manifest under paternal incarceration conditions. While parental incarceration scholars have recently called for increased use of within-group analysis when examining family-level resilience processes in parental incarceration (Arditti & Johnson, under review), future research may also benefit from a between-groups moderated-mediation analysis to examine how these resilience processes compare to families unaffected by parental incarceration. Finally, although this research highlights risk and resilience processes for families while a parent is incarcerated, a critical area for future research is examining how family risk and resilience processes change as incarcerated parents find their way home, as well as the process by which formerly incarcerated parents navigate community reentry and family reunification.

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APPENDIX A

Confirmatory Factor Analysis Mplus Syntax and Output

```
Mplus  VERSION 8.2 (Mac)
MUTHEN & MUTHEN
09/21/2019   4:48 PM

INPUT INSTRUCTIONS

  TITLE: 9.21_6 CFA;
  DATA: FILE IS Dataset _MPlus_9.21_6.dat;
  VARIABLE: NAMES ARE
  C1, C2, C3, K1, K5, K6, K12, K13, K15, K16, K17, K39, AAad, AAcon, AAsi, MHbn, MHfp;
  MISSING ARE ALL (999);
  MODEL: MatHard BY MHfp, MHbn, K39;
  PosPar BY C1-C3;
  ParMH BY K1, K5, K6;
  SocSup BY K12, K13, K15, K16, K17;
  AcAd BY AAad, AAcon, AAsi;
  ANALYSIS: ESTIMATOR = MLR;
  OUTPUT:
  sampstat;
  STANDARDIZED;
  mod;



*** WARNING
  Data set contains cases with missing on all variables.
  These cases were not included in the analysis.
  Number of cases with missing on all variables:  4
   1 WARNING(S) FOUND IN THE INPUT INSTRUCTIONS



9.21_6 CFA;

SUMMARY OF ANALYSIS

Number of groups                                 1
Number of observations                           723

Number of dependent variables                    17
Number of independent variables                  0
Number of continuous latent variables            5
```

Observed dependent variables

Continuous
C1 C2 C3 K1 K5 K6
K12 K13 K15 K16 K17 K39
AAAD AACON AASI MHBN MHFP

Continuous latent variables
MATHARD POSPAR PARMH SOCSUP ACAD

Estimator MLR
Information matrix OBSERVED
Maximum number of iterations 1000
Convergence criterion 0.500D-04
Maximum number of steepest descent iterations 20
Maximum number of iterations for H1 2000
Convergence criterion for H1 0.100D-03

Input data file(s)
Dataset_MPlus_9.21_6.dat

Input data format FREE

SUMMARY OF DATA

Number of missing data patterns 12

COVARIANCE COVERAGE OF DATA

Minimum covariance coverage value 0.100

PROPORTION OF DATA PRESENT

Covariance Coverage

	C1	C2	C3	K1	K5
C1	0.994				
C2	0.994	0.994			
C3	0.994	0.994	0.994		
K1	0.972	0.972	0.972	0.972	

K5	0.971	0.971	0.971	0.971	0.971
K6	0.970	0.970	0.970	0.970	0.970
K12	0.963	0.963	0.963	0.963	0.963
K13	0.963	0.963	0.963	0.963	0.963
K15	0.963	0.963	0.963	0.963	0.963
K16	0.963	0.963	0.963	0.963	0.963
K17	0.963	0.963	0.963	0.963	0.963
K39	0.943	0.943	0.943	0.943	0.943
AAAD	0.947	0.947	0.947	0.928	0.927
AACON	0.985	0.985	0.985	0.972	0.971
AASI	0.985	0.985	0.985	0.972	0.971
MHBN	0.954	0.954	0.954	0.954	0.954
MHFP	0.947	0.947	0.947	0.947	0.947

Covariance Coverage

	K6	K12	K13	K15	K16
K6	0.970				
K12	0.963	0.963			
K13	0.963	0.963	0.963		
K15	0.963	0.963	0.963	0.963	
K16	0.963	0.963	0.963	0.963	0.963
K17	0.963	0.963	0.963	0.963	0.963
K39	0.943	0.943	0.943	0.943	0.943
AAAD	0.925	0.918	0.918	0.918	0.918
AACON	0.970	0.963	0.963	0.963	0.963
AASI	0.970	0.963	0.963	0.963	0.963
MHBN	0.954	0.954	0.954	0.954	0.954
MHFP	0.947	0.947	0.947	0.947	0.947

Covariance Coverage

	K17	K39	AAAD	AACON	AASI
K17	0.963				
K39	0.943	0.943			
AAAD	0.918	0.899	0.953		
AACON	0.963	0.943	0.941	0.985	
AASI	0.963	0.943	0.941	0.985	0.985
MHBN	0.954	0.943	0.910	0.954	0.954
MHFP	0.947	0.943	0.903	0.947	0.947

Covariance Coverage

	MHBN	MHFP

MHBN	0.954	
MHFP	0.947	0.947

SAMPLE STATISTICS

ESTIMATED SAMPLE STATISTICS

Means

C1	C2	C3	K1	K5	
4.435	4.556	4.428	0.256	0.461	

Means

K6	K12	K13	K15	K16	
0.299	3.263	3.152	2.912	3.593	

Means

K17	K39	AAAD	AACON	AASI	
2.692	2.618	8.402	2.183	5.293	

Means

MHBN	MHFP
0.632	1.497

Covariances

	C1	C2	C3	K1	K5	
C1	0.349					
C2	0.196	0.344				
C3	0.210	0.289	0.481			
K1	-0.005	-0.001	-0.019	0.190		
K5	-0.005	0.011	0.005	0.077	0.249	
K6	-0.019	-0.022	-0.028	0.083	0.096	
K12	-0.029	0.066	0.030	-0.033	-0.004	
K13	-0.010	0.006	0.030	-0.064	-0.050	

K15	-0.017	0.001	-0.005	-0.047	-0.104
K16	0.047	0.041	0.057	-0.058	-0.044
K17	0.028	0.039	0.050	-0.063	-0.065
K39	0.002	0.000	-0.014	0.104	0.104
AAAD	0.034	0.125	0.167	-0.087	-0.114
AACON	0.023	0.033	0.063	-0.024	-0.059
AASI	-0.035	0.002	-0.025	-0.083	-0.057
MHBN	0.007	0.032	0.061	0.083	0.064
MHFP	-0.008	-0.002	-0.046	0.280	0.228

Covariances

	K6	K12	K13	K15	K16
K6	0.210				
K12	0.026	2.615			
K13	-0.018	0.952	1.947		
K15	-0.059	0.702	0.584	1.860	
K16	-0.024	0.447	0.556	0.590	1.460
K17	-0.055	0.229	0.363	0.494	0.647
K39	0.127	-0.005	-0.107	-0.171	-0.049
AAAD	-0.130	0.095	0.010	0.144	0.199
AACON	-0.063	0.001	0.006	0.038	0.041
AASI	-0.067	0.051	0.082	0.101	0.068
MHBN	0.102	-0.059	-0.012	-0.113	-0.106
MHFP	0.288	0.030	-0.013	-0.355	-0.165

Covariances

	K17	K39	AAAD	AACON	AASI
K17	1.403				
K39	-0.169	0.776			
AAAD	0.179	-0.189	3.348		
AACON	0.059	-0.030	0.655	0.494	
AASI	0.022	-0.115	0.781	0.269	1.246
MHBN	-0.143	0.316	-0.108	-0.020	-0.154
MHFP	-0.387	0.988	-0.457	-0.095	-0.347

Covariances

	MHBN	MHFP
MHBN	1.089	
MHFP	1.142	4.575

Correlations

	C1	C2	C3	K1	K5
C1	1.000				
C2	0.566	1.000			
C3	0.512	0.710	1.000		
K1	-0.019	-0.002	-0.064	1.000	
K5	-0.018	0.039	0.015	0.353	1.000
K6	-0.071	-0.080	-0.088	0.414	0.418
K12	-0.031	0.069	0.026	-0.047	-0.005
K13	-0.012	0.008	0.031	-0.106	-0.071
K15	-0.020	0.002	-0.005	-0.079	-0.153
K16	0.066	0.059	0.068	-0.110	-0.074
K17	0.040	0.056	0.061	-0.123	-0.111
K39	0.004	0.000	-0.023	0.270	0.236
AAAD	0.032	0.117	0.131	-0.109	-0.125
AACON	0.055	0.079	0.129	-0.078	-0.169
AASI	-0.052	0.002	-0.032	-0.171	-0.103
MHBN	0.011	0.052	0.085	0.182	0.122
MHFP	-0.007	-0.002	-0.031	0.300	0.213

Correlations

	K6	K12	K13	K15	K16
K6	1.000				
K12	0.035	1.000			
K13	-0.028	0.422	1.000		
K15	-0.094	0.318	0.307	1.000	
K16	-0.043	0.229	0.330	0.358	1.000
K17	-0.101	0.119	0.219	0.306	0.452
K39	0.315	-0.003	-0.087	-0.142	-0.046
AAAD	-0.155	0.032	0.004	0.058	0.090
AACON	-0.195	0.001	0.006	0.040	0.048
AASI	-0.130	0.028	0.052	0.066	0.051
MHBN	0.214	-0.035	-0.008	-0.079	-0.084
MHFP	0.294	0.009	-0.004	-0.122	-0.064

Correlations

	K17	K39	AAAD	AACON	AASI
K17	1.000				
K39	-0.162	1.000			
AAAD	0.083	-0.117	1.000		

AACON	0.071	-0.049	0.509	1.000	
AASI	0.016	-0.117	0.382	0.342	1.000
MHBN	-0.116	0.344	-0.057	-0.027	-0.132
MHFP	-0.153	0.525	-0.117	-0.063	-0.146

Correlations

	MHBN	MHFP
MHBN	1.000	
MHFP	0.512	1.000

MAXIMUM LOG-LIKELIHOOD VALUE FOR THE UNRESTRICTED (H1) MODEL IS -14596.928

UNIVARIATE SAMPLE STATISTICS

UNIVARIATE HIGHER-ORDER MOMENT DESCRIPTIVE STATISTICS

Variable/ Sample Size	Mean/ Variance	Skewness/ Kurtosis	Minimum/ Maximum	% with Min/Max	Percentiles 20%/60%	40%/80%	Median
C1	4.435	-0.741	1.000	0.14%	4.000	4.000	4.000
719.000	0.349	1.154	5.000	47.98%	5.000	5.000	
C2	4.556	-1.190	1.000	0.14%	4.000	4.000	5.000
719.000	0.344	1.956	5.000	59.81%	5.000	5.000	
C3	4.428	-1.005	1.000	0.14%	4.000	4.000	5.000
719.000	0.481	0.639	5.000	53.69%	5.000	5.000	
K1	0.256	1.118	0.000	74.40%	0.000	0.000	0.000
703.000	0.190	-0.750	1.000	25.60%	0.000	1.000	
K5	0.462	0.154	0.000	53.85%	0.000	0.000	0.000
702.000	0.249	-1.976	1.000	46.15%	1.000	1.000	
K6	0.300	0.875	0.000	70.04%	0.000	0.000	0.000
701.000	0.210	-1.234	1.000	29.96%	0.000	1.000	
K12	3.261	-0.218	1.000	22.84%	1.000	3.000	3.000
696.000	2.616	-1.563	5.000	37.64%	4.000	5.000	
K13	3.151	0.003	1.000	13.36%	2.000	3.000	3.000
696.000	1.947	-1.315	5.000	25.72%	4.000	5.000	
K15	2.911	0.195	1.000	16.95%	2.000	2.000	3.000
696.000	1.860	-1.209	5.000	18.39%	3.000	4.000	
K16	3.592	-0.411	1.000	5.03%	2.000	3.000	4.000
696.000	1.460	-0.885	5.000	29.74%	4.000	5.000	

K17	2.691	0.562	1.000	12.64%	2.000	2.000	2.000
696.000	1.403	-0.611	5.000	11.21%	3.000	4.000	
K39	2.617	0.006	1.000	10.12%	2.000	2.000	3.000
682.000	0.779	-0.480	5.000	0.73%	3.000	3.000	
AAAD	8.403	-1.413	2.000	1.02%	7.000	8.000	9.000
689.000	3.341	1.667	10.000	36.14%	9.000	10.000	
AACON	2.185	-0.273	1.000	16.99%	2.000	2.000	2.000
712.000	0.491	-0.956	3.000	35.53%	2.000	3.000	
AASI	5.296	-1.531	2.000	4.21%	4.000	6.000	6.000
712.000	1.239	1.390	6.000	64.04%	6.000	6.000	
MHBN	0.633	1.485	0.000	67.10%	0.000	0.000	0.000
690.000	1.090	0.927	4.000	1.01%	0.000	1.000	
MHFP	1.499	1.253	0.000	56.35%	0.000	0.000	0.000
685.000	4.589	0.292	7.000	4.53%	1.000	3.000	

THE MODEL ESTIMATION TERMINATED NORMALLY

MODEL FIT INFORMATION

Number of Free Parameters 61

Loglikelihood

H0 Value	-14730.254
H0 Scaling Correction Factor for MLR	1.1144
H1 Value	-14596.928
H1 Scaling Correction Factor for MLR	1.0474

Information Criteria

Akaike (AIC)	29582.509
Bayesian (BIC)	29862.097
Sample-Size Adjusted BIC (n* = (n + 2) / 24)	29668.404

Chi-Square Test of Model Fit

Value	264.026*
Degrees of Freedom	109
P-Value	0.0000
Scaling Correction Factor	1.0099

for MLR

* The chi-square value for MLM, MLMV, MLR, ULSMV, WLSM and WLSMV cannot be used
for chi-square difference testing in the regular way. MLM, MLR and WLSM
chi-square difference testing is described on the Mplus website. MLMV, WLSMV,
and ULSMV difference testing is done using the DIFFTEST option.

RMSEA (Root Mean Square Error Of Approximation)

Estimate	0.044	
90 Percent C.I.	0.038	0.051
Probability RMSEA <= .05	0.911	

CFI/TLI

CFI	0.938
TLI	0.922

Chi-Square Test of Model Fit for the Baseline Model

Value	2616.575
Degrees of Freedom	136
P-Value	0.0000

SRMR (Standardized Root Mean Square Residual)

Value	0.041

MODEL RESULTS

	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
MATHARD BY				
MHFP	1.000	0.000	999.000	999.000
MHBN	0.348	0.026	13.615	0.000
K39	0.318	0.028	11.510	0.000
POSPAR BY				
C1	1.000	0.000	999.000	999.000
C2	1.374	0.095	14.456	0.000
C3	1.481	0.106	13.966	0.000

PARMH BY				
K1	1.000	0.000	999.000	999.000
K5	1.088	0.107	10.214	0.000
K6	1.216	0.124	9.798	0.000
SOCSUP BY				
K12	1.000	0.000	999.000	999.000
K13	1.036	0.093	11.107	0.000
K15	1.090	0.133	8.177	0.000
K16	1.078	0.185	5.832	0.000
K17	0.874	0.167	5.224	0.000
ACAD BY				
AAAD	1.000	0.000	999.000	999.000
AACON	0.349	0.038	9.130	0.000
AASI	0.415	0.045	9.234	0.000
POSPAR WITH				
MATHARD	0.002	0.031	0.060	0.952
PARMH WITH				
MATHARD	0.256	0.035	7.407	0.000
POSPAR	-0.007	0.006	-1.193	0.233
SOCSUP WITH				
MATHARD	-0.231	0.066	-3.510	0.000
POSPAR	0.020	0.014	1.433	0.152
PARMH	-0.040	0.012	-3.409	0.001
ACAD WITH				
MATHARD	-0.455	0.143	-3.174	0.002
POSPAR	0.072	0.026	2.794	0.005
PARMH	-0.119	0.023	-5.122	0.000
SOCSUP	0.123	0.057	2.150	0.032
Intercepts				
C1	4.435	0.022	201.385	0.000
C2	4.556	0.022	208.214	0.000
C3	4.428	0.026	171.143	0.000
K1	0.256	0.016	15.559	0.000
K5	0.461	0.019	24.538	0.000
K6	0.299	0.017	17.317	0.000
K12	3.262	0.061	53.197	0.000
K13	3.152	0.053	59.552	0.000
K15	2.912	0.052	56.282	0.000
K16	3.593	0.046	78.416	0.000

K17	2.692	0.045	59.885	0.000
K39	2.618	0.034	77.709	0.000
AAAD	8.402	0.069	121.063	0.000
AACON	2.183	0.026	83.023	0.000
AASI	5.293	0.042	126.357	0.000
MHBN	0.632	0.040	15.926	0.000
MHFP	1.498	0.081	18.388	0.000

Variances

MATHARD	3.153	0.316	9.986	0.000
POSPAR	0.142	0.022	6.390	0.000
PARMH	0.070	0.010	6.700	0.000
SOCSUP	0.533	0.131	4.051	0.000
ACAD	1.876	0.279	6.720	0.000

Residual Variances

C1	0.207	0.016	12.593	0.000
C2	0.076	0.015	5.103	0.000
C3	0.170	0.022	7.597	0.000
K1	0.120	0.010	12.130	0.000
K5	0.166	0.011	15.124	0.000
K6	0.106	0.012	8.981	0.000
K12	2.083	0.139	15.000	0.000
K13	1.376	0.112	12.283	0.000
K15	1.227	0.086	14.328	0.000
K16	0.840	0.086	9.738	0.000
K17	0.996	0.078	12.772	0.000
K39	0.459	0.043	10.771	0.000
AAAD	1.479	0.210	7.035	0.000
AACON	0.266	0.026	10.352	0.000
AASI	0.921	0.069	13.248	0.000
MHBN	0.707	0.067	10.529	0.000
MHFP	1.426	0.237	6.009	0.000

STANDARDIZED MODEL RESULTS

STDYX Standardization

			Two-Tailed	
	Estimate	S.E.	Est./S.E.	P-Value
MATHARD BY				
MHFP	0.830	0.031	26.936	0.000
MHBN	0.593	0.037	15.921	0.000

K39	0.640	0.037	17.501	0.000
POSPAR BY				
C1	0.638	0.037	17.170	0.000
C2	0.883	0.026	33.782	0.000
C3	0.805	0.027	29.363	0.000
PARMH BY				
K1	0.607	0.041	14.747	0.000
K5	0.578	0.038	15.329	0.000
K6	0.703	0.040	17.594	0.000
SOCSUP BY				
K12	0.451	0.055	8.172	0.000
K13	0.542	0.051	10.667	0.000
K15	0.583	0.038	15.174	0.000
K16	0.651	0.045	14.374	0.000
K17	0.539	0.049	11.069	0.000
ACAD BY				
AAAD	0.748	0.042	17.816	0.000
AACON	0.680	0.038	17.882	0.000
AASI	0.510	0.040	12.660	0.000
POSPAR WITH				
MATHARD	0.003	0.046	0.060	0.952
PARMH WITH				
MATHARD	0.544	0.051	10.659	0.000
POSPAR	-0.068	0.055	-1.221	0.222
SOCSUP WITH				
MATHARD	-0.178	0.053	-3.384	0.001
POSPAR	0.074	0.050	1.494	0.135
PARMH	-0.205	0.054	-3.770	0.000
ACAD WITH				
MATHARD	-0.187	0.054	-3.465	0.001
POSPAR	0.139	0.049	2.806	0.005
PARMH	-0.327	0.058	-5.667	0.000
SOCSUP	0.123	0.056	2.210	0.027
Intercepts				
C1	7.510	0.266	28.188	0.000
C2	7.766	0.312	24.908	0.000
C3	6.383	0.218	29.226	0.000

K1	0.587	0.025	23.152	0.000
K5	0.926	0.035	26.426	0.000
K6	0.653	0.027	24.257	0.000
K12	2.017	0.052	38.778	0.000
K13	2.259	0.052	43.599	0.000
K15	2.135	0.046	46.202	0.000
K16	2.973	0.082	36.222	0.000
K17	2.272	0.047	48.696	0.000
K39	2.968	0.080	37.270	0.000
AAAD	4.587	0.197	23.334	0.000
AACON	3.104	0.079	39.429	0.000
AASI	4.745	0.196	24.172	0.000
MHBN	0.605	0.023	26.219	0.000
MHFP	0.700	0.024	28.896	0.000

Variances

MATHARD	1.000	0.000	999.000	999.000
POSPAR	1.000	0.000	999.000	999.000
PARMH	1.000	0.000	999.000	999.000
SOCSUP	1.000	0.000	999.000	999.000
ACAD	1.000	0.000	999.000	999.000

Residual Variances

C1	0.593	0.047	12.486	0.000
C2	0.221	0.046	4.786	0.000
C3	0.353	0.044	7.998	0.000
K1	0.632	0.050	12.654	0.000
K5	0.666	0.044	15.272	0.000
K6	0.506	0.056	9.009	0.000
K12	0.796	0.050	15.974	0.000
K13	0.707	0.055	12.843	0.000
K15	0.660	0.045	14.713	0.000
K16	0.576	0.059	9.746	0.000
K17	0.710	0.052	13.527	0.000
K39	0.591	0.047	12.622	0.000
AAAD	0.441	0.063	7.024	0.000
AACON	0.537	0.052	10.380	0.000
AASI	0.740	0.041	18.007	0.000
MHBN	0.649	0.044	14.696	0.000
MHFP	0.311	0.051	6.089	0.000

STDY Standardization

			Two-Tailed
Estimate	S.E.	Est./S.E.	P-Value

MATHARD BY				
MHFP	0.830	0.031	26.936	0.000
MHBN	0.593	0.037	15.921	0.000
K39	0.640	0.037	17.501	0.000
POSPAR BY				
C1	0.638	0.037	17.170	0.000
C2	0.883	0.026	33.782	0.000
C3	0.805	0.027	29.363	0.000
PARMH BY				
K1	0.607	0.041	14.747	0.000
K5	0.578	0.038	15.329	0.000
K6	0.703	0.040	17.594	0.000
SOCSUP BY				
K12	0.451	0.055	8.172	0.000
K13	0.542	0.051	10.667	0.000
K15	0.583	0.038	15.174	0.000
K16	0.651	0.045	14.374	0.000
K17	0.539	0.049	11.069	0.000
ACAD BY				
AAAD	0.748	0.042	17.816	0.000
AACON	0.680	0.038	17.882	0.000
AASI	0.510	0.040	12.660	0.000
POSPAR WITH				
MATHARD	0.003	0.046	0.060	0.952
PARMH WITH				
MATHARD	0.544	0.051	10.659	0.000
POSPAR	-0.068	0.055	-1.221	0.222
SOCSUP WITH				
MATHARD	-0.178	0.053	-3.384	0.001
POSPAR	0.074	0.050	1.494	0.135
PARMH	-0.205	0.054	-3.770	0.000
ACAD WITH				
MATHARD	-0.187	0.054	-3.465	0.001
POSPAR	0.139	0.049	2.806	0.005
PARMH	-0.327	0.058	-5.667	0.000
SOCSUP	0.123	0.056	2.210	0.027

Intercepts

C1	7.510	0.266	28.188	0.000
C2	7.766	0.312	24.908	0.000
C3	6.383	0.218	29.226	0.000
K1	0.587	0.025	23.152	0.000
K5	0.926	0.035	26.426	0.000
K6	0.653	0.027	24.257	0.000
K12	2.017	0.052	38.778	0.000
K13	2.259	0.052	43.599	0.000
K15	2.135	0.046	46.202	0.000
K16	2.973	0.082	36.222	0.000
K17	2.272	0.047	48.696	0.000
K39	2.968	0.080	37.270	0.000
AAAD	4.587	0.197	23.334	0.000
AACON	3.104	0.079	39.429	0.000
AASI	4.745	0.196	24.172	0.000
MHBN	0.605	0.023	26.219	0.000
MHFP	0.700	0.024	28.896	0.000

Variances

MATHARD	1.000	0.000	999.000	999.000
POSPAR	1.000	0.000	999.000	999.000
PARMH	1.000	0.000	999.000	999.000
SOCSUP	1.000	0.000	999.000	999.000
ACAD	1.000	0.000	999.000	999.000

Residual Variances

C1	0.593	0.047	12.486	0.000
C2	0.221	0.046	4.786	0.000
C3	0.353	0.044	7.998	0.000
K1	0.632	0.050	12.654	0.000
K5	0.666	0.044	15.272	0.000
K6	0.506	0.056	9.009	0.000
K12	0.796	0.050	15.974	0.000
K13	0.707	0.055	12.843	0.000
K15	0.660	0.045	14.713	0.000
K16	0.576	0.059	9.746	0.000
K17	0.710	0.052	13.527	0.000
K39	0.591	0.047	12.622	0.000
AAAD	0.441	0.063	7.024	0.000
AACON	0.537	0.052	10.380	0.000
AASI	0.740	0.041	18.007	0.000
MHBN	0.649	0.044	14.696	0.000
MHFP	0.311	0.051	6.089	0.000

STD Standardization

	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
MATHARD BY				
MHFP	1.776	0.089	19.972	0.000
MHBN	0.619	0.043	14.231	0.000
K39	0.564	0.035	16.269	0.000
POSPAR BY				
C1	0.377	0.029	12.780	0.000
C2	0.518	0.028	18.216	0.000
C3	0.558	0.027	20.642	0.000
PARMH BY				
K1	0.265	0.020	13.400	0.000
K5	0.288	0.019	15.359	0.000
K6	0.322	0.020	16.299	0.000
SOCSUP BY				
K12	0.730	0.090	8.103	0.000
K13	0.756	0.073	10.377	0.000
K15	0.795	0.057	14.063	0.000
K16	0.787	0.060	13.156	0.000
K17	0.638	0.062	10.274	0.000
ACAD BY				
AAAD	1.370	0.102	13.440	0.000
AACON	0.478	0.030	15.976	0.000
AASI	0.569	0.054	10.558	0.000
POSPAR WITH				
MATHARD	0.003	0.046	0.060	0.952
PARMH WITH				
MATHARD	0.544	0.051	10.659	0.000
POSPAR	-0.068	0.055	-1.221	0.222
SOCSUP WITH				
MATHARD	-0.178	0.053	-3.384	0.001
POSPAR	0.074	0.050	1.494	0.135
PARMH	-0.205	0.054	-3.770	0.000
ACAD WITH				
MATHARD	-0.187	0.054	-3.465	0.001

POSPAR	0.139	0.049	2.806	0.005
PARMH	-0.327	0.058	-5.667	0.000
SOCSUP	0.123	0.056	2.210	0.027

Intercepts

C1	4.435	0.022	201.385	0.000
C2	4.556	0.022	208.214	0.000
C3	4.428	0.026	171.143	0.000
K1	0.256	0.016	15.559	0.000
K5	0.461	0.019	24.538	0.000
K6	0.299	0.017	17.317	0.000
K12	3.262	0.061	53.197	0.000
K13	3.152	0.053	59.552	0.000
K15	2.912	0.052	56.282	0.000
K16	3.593	0.046	78.416	0.000
K17	2.692	0.045	59.885	0.000
K39	2.618	0.034	77.709	0.000
AAAD	8.402	0.069	121.063	0.000
AACON	2.183	0.026	83.023	0.000
AASI	5.293	0.042	126.357	0.000
MHBN	0.632	0.040	15.926	0.000
MHFP	1.498	0.081	18.388	0.000

Variances

MATHARD	1.000	0.000	999.000	999.000
POSPAR	1.000	0.000	999.000	999.000
PARMH	1.000	0.000	999.000	999.000
SOCSUP	1.000	0.000	999.000	999.000
ACAD	1.000	0.000	999.000	999.000

Residual Variances

C1	0.207	0.016	12.593	0.000
C2	0.076	0.015	5.103	0.000
C3	0.170	0.022	7.597	0.000
K1	0.120	0.010	12.130	0.000
K5	0.166	0.011	15.124	0.000
K6	0.106	0.012	8.981	0.000
K12	2.083	0.139	15.000	0.000
K13	1.376	0.112	12.283	0.000
K15	1.227	0.086	14.328	0.000
K16	0.840	0.086	9.738	0.000
K17	0.996	0.078	12.772	0.000
K39	0.459	0.043	10.771	0.000
AAAD	1.479	0.210	7.035	0.000
AACON	0.266	0.026	10.352	0.000
AASI	0.921	0.069	13.248	0.000

MHBN	0.707	0.067	10.529	0.000
MHFP	1.426	0.237	6.009	0.000

R-SQUARE

Observed Variable	Estimate	S.E.	Two-Tailed Est./S.E.	P-Value
C1	0.407	0.047	8.585	0.000
C2	0.779	0.046	16.891	0.000
C3	0.647	0.044	14.681	0.000
K1	0.368	0.050	7.373	0.000
K5	0.334	0.044	7.664	0.000
K6	0.494	0.056	8.797	0.000
K12	0.204	0.050	4.086	0.000
K13	0.293	0.055	5.333	0.000
K15	0.340	0.045	7.587	0.000
K16	0.424	0.059	7.187	0.000
K17	0.290	0.052	5.534	0.000
K39	0.409	0.047	8.751	0.000
AAAD	0.559	0.063	8.908	0.000
AACON	0.463	0.052	8.941	0.000
AASI	0.260	0.041	6.330	0.000
MHBN	0.351	0.044	7.961	0.000
MHFP	0.689	0.051	13.468	0.000

QUALITY OF NUMERICAL RESULTS

Condition Number for the Information Matrix 0.246E-03
(ratio of smallest to largest eigenvalue)

MODEL MODIFICATION INDICES

NOTE: Modification indices for direct effects of observed dependent variables regressed on covariates may not be included. To include these, request MODINDICES (ALL).

Minimum M.I. value for printing the modification index 10.000

	M.I.	E.P.C.	Std E.P.C.	StdYX E.P.C.

BY Statements

MATHARD	BY K17	10.498	-0.089	-0.158	-0.134
PARMH	BY K39	13.483	0.712	0.189	0.214

WITH Statements

K13	WITH K12	58.013	0.603	0.603	0.356
K16	WITH K12	12.805	-0.255	-0.255	-0.193
K17	WITH K12	27.990	-0.355	-0.355	-0.247
K17	WITH K13	12.714	-0.211	-0.211	-0.180
K17	WITH K16	43.592	0.366	0.366	0.400
MHFP	WITH MHBN	14.189	0.477	0.477	0.475

Beginning Time: 16:48:45
Ending Time: 16:48:46
Elapsed Time: 00:00:01

MUTHEN & MUTHEN
3463 Stoner Ave.
Los Angeles, CA 90066

Tel: (310) 391-9971
Fax: (310) 391-8971
Web: www.StatModel.com
Support: Support@StatModel.com

APPENDIX B

Structural Equation Analysis Mplus Syntax and Output

```
Mplus VERSION 8.2 (Mac)
MUTHEN & MUTHEN
11/04/2019   9:53 AM

INPUT INSTRUCTIONS

  TITLE: 9.21_6 SEM;
  DATA: FILE IS Dataset_MPlus_9.21_6.dat;
  VARIABLE: NAMES ARE
  C1, C2, C3, K1, K5, K6, K12, K13, K15, K16, K17, K39, AAad, AAcon, AAsi, MHbn, MHfp;
  MISSING ARE ALL (999);
  MODEL: MatHard BY MHfp, MHbn, K39;
  PosPar BY C1-C3;
  ParMH BY K1, K5, K6;
  SocSup BY K12, K13, K15, K16, K17;
  AcAd BY AAad, AAcon, AAsi;
  PosPar ON MatHard;
  ParMH ON MatHard;
  SocSup ON MatHard;
  AcAd ON MatHard;
  AcAd ON MatHard;
  AcAd ON PosPar;
  AcAd ON ParMH;
  AcAd ON SocSup;
  PosPar WITH ParMH SocSup;
  ParMH WITH SocSup;
  MODEL INDIRECT:
  AcAd IND PosPar MatHard;
  AcAd IND ParMH MatHard;
  AcAd IND SocSup MatHard;
  ANALYSIS: ESTIMATOR = ML;
  BOOTSTRAP = 5000;
  OUTPUT:
  sampstat;
  STANDARDIZED;
  !modindices (all);



*** WARNING
  Data set contains cases with missing on all variables.
  These cases were not included in the analysis.
```

Number of cases with missing on all variables: 4
1 WARNING(S) FOUND IN THE INPUT INSTRUCTIONS

9.21_6 SEM;

SUMMARY OF ANALYSIS

Number of groups 1
Number of observations 723

Number of dependent variables 17
Number of independent variables 0
Number of continuous latent variables 5

Observed dependent variables

Continuous
C1 C2 C3 K1 K5 K6
K12 K13 K15 K16 K17 K39
AAAD AACON AASI MHBN MHFP

Continuous latent variables
MATHARD POSPAR PARMH SOCSUP ACAD

Estimator ML
Information matrix OBSERVED
Maximum number of iterations 1000
Convergence criterion 0.500D-04
Maximum number of steepest descent iterations 20
Maximum number of iterations for H1 2000
Convergence criterion for H1 0.100D-03
Number of bootstrap draws
Requested 5000
Completed 5000

Input data file(s)
Dataset_MPlus_9.21_6.dat

Input data format FREE

SUMMARY OF DATA

Number of missing data patterns 12

COVARIANCE COVERAGE OF DATA

Minimum covariance coverage value 0.100

PROPORTION OF DATA PRESENT

Covariance Coverage

	C1	C2	C3	K1	K5
C1	0.994				
C2	0.994	0.994			
C3	0.994	0.994	0.994		
K1	0.972	0.972	0.972	0.972	
K5	0.971	0.971	0.971	0.971	0.971
K6	0.970	0.970	0.970	0.970	0.970
K12	0.963	0.963	0.963	0.963	0.963
K13	0.963	0.963	0.963	0.963	0.963
K15	0.963	0.963	0.963	0.963	0.963
K16	0.963	0.963	0.963	0.963	0.963
K17	0.963	0.963	0.963	0.963	0.963
K39	0.943	0.943	0.943	0.943	0.943
AAAD	0.947	0.947	0.947	0.928	0.927
AACON	0.985	0.985	0.985	0.972	0.971
AASI	0.985	0.985	0.985	0.972	0.971
MHBN	0.954	0.954	0.954	0.954	0.954
MHFP	0.947	0.947	0.947	0.947	0.947

Covariance Coverage

	K6	K12	K13	K15	K16
K6	0.970				
K12	0.963	0.963			
K13	0.963	0.963	0.963		
K15	0.963	0.963	0.963	0.963	
K16	0.963	0.963	0.963	0.963	0.963
K17	0.963	0.963	0.963	0.963	0.963
K39	0.943	0.943	0.943	0.943	0.943
AAAD	0.925	0.918	0.918	0.918	0.918
AACON	0.970	0.963	0.963	0.963	0.963
AASI	0.970	0.963	0.963	0.963	0.963

MHBN	0.954	0.954	0.954	0.954	0.954
MHFP	0.947	0.947	0.947	0.947	0.947

Covariance Coverage

	K17	K39	AAAD	AACON	AASI
K17	0.963				
K39	0.943	0.943			
AAAD	0.918	0.899	0.953		
AACON	0.963	0.943	0.941	0.985	
AASI	0.963	0.943	0.941	0.985	0.985
MHBN	0.954	0.943	0.910	0.954	0.954
MHFP	0.947	0.943	0.903	0.947	0.947

Covariance Coverage

	MHBN	MHFP
MHBN	0.954	
MHFP	0.947	0.947

SAMPLE STATISTICS

ESTIMATED SAMPLE STATISTICS

Means

C1	C2	C3	K1	K5
4.435	4.556	4.428	0.256	0.461

Means

K6	K12	K13	K15	K16
0.299	3.263	3.152	2.912	3.593

Means

K17	K39	AAAD	AACON	AASI
2.692	2.618	8.402	2.183	5.293

Means

MHBN	MHFP
0.632	1.497

Covariances

	C1	C2	C3	K1	K5
C1	0.349				
C2	0.196	0.344			
C3	0.210	0.289	0.481		
K1	-0.005	-0.001	-0.019	0.190	
K5	-0.005	0.011	0.005	0.077	0.249
K6	-0.019	-0.022	-0.028	0.083	0.096
K12	-0.029	0.066	0.030	-0.033	-0.004
K13	-0.010	0.006	0.030	-0.064	-0.050
K15	-0.017	0.001	-0.005	-0.047	-0.104
K16	0.047	0.041	0.057	-0.058	-0.044
K17	0.028	0.039	0.050	-0.063	-0.065
K39	0.002	0.000	-0.014	0.104	0.104
AAAD	0.034	0.125	0.167	-0.087	-0.114
AACON	0.023	0.033	0.063	-0.024	-0.059
AASI	-0.035	0.002	-0.025	-0.083	-0.057
MHBN	0.007	0.032	0.061	0.083	0.064
MHFP	-0.008	-0.002	-0.046	0.280	0.228

Covariances

	K6	K12	K13	K15	K16
K6	0.210				
K12	0.026	2.615			
K13	-0.018	0.952	1.947		
K15	-0.059	0.702	0.584	1.860	
K16	-0.024	0.447	0.556	0.590	1.460
K17	-0.055	0.229	0.363	0.494	0.647
K39	0.127	-0.005	-0.107	-0.171	-0.049
AAAD	-0.130	0.095	0.010	0.144	0.199
AACON	-0.063	0.001	0.006	0.038	0.041
AASI	-0.067	0.051	0.082	0.101	0.068
MHBN	0.102	-0.059	-0.012	-0.113	-0.106
MHFP	0.288	0.030	-0.013	-0.355	-0.165

Covariances

	K17	K39	AAAD	AACON	AASI
K17	1.403				
K39	-0.169	0.776			
AAAD	0.179	-0.189	3.348		
AACON	0.059	-0.030	0.655	0.494	
AASI	0.022	-0.115	0.781	0.269	1.246
MHBN	-0.143	0.316	-0.108	-0.020	-0.154
MHFP	-0.387	0.988	-0.457	-0.095	-0.347

Covariances

	MHBN	MHFP
MHBN	1.089	
MHFP	1.142	4.575

Correlations

	C1	C2	C3	K1	K5
C1	1.000				
C2	0.566	1.000			
C3	0.512	0.710	1.000		
K1	-0.019	-0.002	-0.064	1.000	
K5	-0.018	0.039	0.015	0.353	1.000
K6	-0.071	-0.080	-0.088	0.414	0.418
K12	-0.031	0.069	0.026	-0.047	-0.005
K13	-0.012	0.008	0.031	-0.106	-0.071
K15	-0.020	0.002	-0.005	-0.079	-0.153
K16	0.066	0.059	0.068	-0.110	-0.074
K17	0.040	0.056	0.061	-0.123	-0.111
K39	0.004	0.000	-0.023	0.270	0.236
AAAD	0.032	0.117	0.131	-0.109	-0.125
AACON	0.055	0.079	0.129	-0.078	-0.169
AASI	-0.052	0.002	-0.032	-0.171	-0.103
MHBN	0.011	0.052	0.085	0.182	0.122
MHFP	-0.007	-0.002	-0.031	0.300	0.213

Correlations

	K6	K12	K13	K15	K16
K6	1.000				
K12	0.035	1.000			

K13	-0.028	0.422	1.000		
K15	-0.094	0.318	0.307	1.000	
K16	-0.043	0.229	0.330	0.358	1.000
K17	-0.101	0.119	0.219	0.306	0.452
K39	0.315	-0.003	-0.087	-0.142	-0.046
AAAD	-0.155	0.032	0.004	0.058	0.090
AACON	-0.195	0.001	0.006	0.040	0.048
AASI	-0.130	0.028	0.052	0.066	0.051
MHBN	0.214	-0.035	-0.008	-0.079	-0.084
MHFP	0.294	0.009	-0.004	-0.122	-0.064

Correlations

	K17	K39	AAAD	AACON	AASI
K17	1.000				
K39	-0.162	1.000			
AAAD	0.083	-0.117	1.000		
AACON	0.071	-0.049	0.509	1.000	
AASI	0.016	-0.117	0.382	0.342	1.000
MHBN	-0.116	0.344	-0.057	-0.027	-0.132
MHFP	-0.153	0.525	-0.117	-0.063	-0.146

Correlations

	MHBN	MHFP
MHBN	1.000	
MHFP	0.512	1.000

MAXIMUM LOG-LIKELIHOOD VALUE FOR THE UNRESTRICTED (H1) MODEL IS -14596.928

UNIVARIATE SAMPLE STATISTICS

UNIVARIATE HIGHER-ORDER MOMENT DESCRIPTIVE STATISTICS

Variable/ Sample Size	Mean/ Variance	Skewness/ Kurtosis	Minimum/ Maximum	% with Min/Max	Percentiles 20%/60%	40%/80%	Median
C1	4.435	-0.741	1.000	0.14%	4.000	4.000	4.000
719.000	0.349	1.154	5.000	47.98%	5.000	5.000	

C2		4.556	-1.190	1.000	0.14%	4.000	4.000	5.000
	719.000	0.344	1.956	5.000	59.81%	5.000	5.000	
C3		4.428	-1.005	1.000	0.14%	4.000	4.000	5.000
	719.000	0.481	0.639	5.000	53.69%	5.000	5.000	
K1		0.256	1.118	0.000	74.40%	0.000	0.000	0.000
	703.000	0.190	-0.750	1.000	25.60%	0.000	1.000	
K5		0.462	0.154	0.000	53.85%	0.000	0.000	0.000
	702.000	0.249	-1.976	1.000	46.15%	1.000	1.000	
K6		0.300	0.875	0.000	70.04%	0.000	0.000	0.000
	701.000	0.210	-1.234	1.000	29.96%	0.000	1.000	
K12		3.261	-0.218	1.000	22.84%	1.000	3.000	3.000
	696.000	2.616	-1.563	5.000	37.64%	4.000	5.000	
K13		3.151	0.003	1.000	13.36%	2.000	3.000	3.000
	696.000	1.947	-1.315	5.000	25.72%	4.000	5.000	
K15		2.911	0.195	1.000	16.95%	2.000	2.000	3.000
	696.000	1.860	-1.209	5.000	18.39%	3.000	4.000	
K16		3.592	-0.411	1.000	5.03%	2.000	3.000	4.000
	696.000	1.460	-0.885	5.000	29.74%	4.000	5.000	
K17		2.691	0.562	1.000	12.64%	2.000	2.000	2.000
	696.000	1.403	-0.611	5.000	11.21%	3.000	4.000	
K39		2.617	0.006	1.000	10.12%	2.000	2.000	3.000
	682.000	0.779	-0.480	5.000	0.73%	3.000	3.000	
AAAD		8.403	-1.413	2.000	1.02%	7.000	8.000	9.000
	689.000	3.341	1.667	10.000	36.14%	9.000	10.000	
AACON		2.185	-0.273	1.000	16.99%	2.000	2.000	2.000
	712.000	0.491	-0.956	3.000	35.53%	2.000	3.000	
AASI		5.296	-1.531	2.000	4.21%	4.000	6.000	6.000
	712.000	1.239	1.390	6.000	64.04%	6.000	6.000	
MHBN		0.633	1.485	0.000	67.10%	0.000	0.000	0.000
	690.000	1.090	0.927	4.000	1.01%	0.000	1.000	
MHFP		1.499	1.253	0.000	56.35%	0.000	0.000	0.000
	685.000	4.589	0.292	7.000	4.53%	1.000	3.000	

THE MODEL ESTIMATION TERMINATED NORMALLY

MODEL FIT INFORMATION

Number of Free Parameters 61

Loglikelihood

H0 Value -14730.254
H1 Value -14596.928

Information Criteria

Akaike (AIC)	29582.509
Bayesian (BIC)	29862.097
Sample-Size Adjusted BIC (n* = (n + 2) / 24)	29668.404

Chi-Square Test of Model Fit

Value	266.652
Degrees of Freedom	109
P-Value	0.0000

RMSEA (Root Mean Square Error Of Approximation)

Estimate	0.045	
90 Percent C.I.	0.038	0.052
Probability RMSEA <= .05	0.896	

CFI/TLI

CFI	0.941
TLI	0.926

Chi-Square Test of Model Fit for the Baseline Model

Value	2800.057
Degrees of Freedom	136
P-Value	0.0000

SRMR (Standardized Root Mean Square Residual)

Value	0.041

MODEL RESULTS

	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
MATHARD BY				
MHFP	1.000	0.000	999.000	999.000
MHBN	0.348	0.027	13.136	0.000
K39	0.318	0.028	11.321	0.000

POSPAR BY				
C1	1.000	0.000	999.000	999.000
C2	1.374	0.098	13.997	0.000
C3	1.481	0.108	13.706	0.000
PARMH BY				
K1	1.000	0.000	999.000	999.000
K5	1.088	0.110	9.862	0.000
K6	1.216	0.127	9.569	0.000
SOCSUP BY				
K12	1.000	0.000	999.000	999.000
K13	1.036	0.098	10.611	0.000
K15	1.090	0.142	7.677	0.000
K16	1.078	0.200	5.394	0.000
K17	0.874	0.179	4.879	0.000
ACAD BY				
AAAD	1.000	0.000	999.000	999.000
AACON	0.349	0.039	8.913	0.000
AASI	0.415	0.046	9.097	0.000
POSPAR ON				
MATHARD	0.001	0.010	0.060	0.952
PARMH ON				
MATHARD	0.081	0.011	7.435	0.000
SOCSUP ON				
MATHARD	-0.073	0.022	-3.293	0.001
ACAD ON				
MATHARD	-0.011	0.063	-0.174	0.862
POSPAR	0.417	0.201	2.069	0.039
PARMH	-1.558	0.471	-3.307	0.001
SOCSUP	0.095	0.117	0.814	0.415
POSPAR WITH				
PARMH	-0.007	0.005	-1.293	0.196
SOCSUP	0.021	0.015	1.408	0.159
PARMH WITH				
SOCSUP	-0.021	0.011	-1.971	0.049

Intercepts

C1	4.435	0.022	199.960	0.000
C2	4.556	0.022	207.723	0.000
C3	4.428	0.026	169.480	0.000
K1	0.256	0.017	15.399	0.000
K5	0.461	0.019	24.809	0.000
K6	0.299	0.017	17.495	0.000
K12	3.262	0.062	53.023	0.000
K13	3.152	0.053	59.393	0.000
K15	2.912	0.051	56.541	0.000
K16	3.593	0.045	79.527	0.000
K17	2.692	0.046	59.148	0.000
K39	2.618	0.034	76.259	0.000
AAAD	8.402	0.068	124.224	0.000
AACON	2.183	0.026	83.540	0.000
AASI	5.293	0.041	129.924	0.000
MHBN	0.632	0.039	16.016	0.000
MHFP	1.498	0.082	18.354	0.000

Variances

MATHARD	3.153	0.323	9.767	0.000

Residual Variances

C1	0.207	0.017	12.468	0.000
C2	0.076	0.015	5.026	0.000
C3	0.170	0.023	7.507	0.000
K1	0.120	0.010	12.019	0.000
K5	0.166	0.011	14.989	0.000
K6	0.106	0.012	8.911	0.000
K12	2.083	0.141	14.766	0.000
K13	1.376	0.115	11.989	0.000
K15	1.227	0.087	14.099	0.000
K16	0.840	0.089	9.482	0.000
K17	0.996	0.078	12.733	0.000
K39	0.459	0.043	10.771	0.000
AAAD	1.479	0.212	6.989	0.000
AACON	0.266	0.026	10.076	0.000
AASI	0.921	0.069	13.311	0.000
MHBN	0.707	0.066	10.708	0.000
MHFP	1.426	0.239	5.965	0.000
POSPAR	0.142	0.022	6.387	0.000
PARMH	0.049	0.008	6.113	0.000
SOCSUP	0.516	0.132	3.909	0.000
ACAD	1.645	0.259	6.361	0.000

STANDARDIZED MODEL RESULTS

STDYX Standardization

	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
MATHARD BY				
MHFP	0.830	0.031	26.485	0.000
MHBN	0.593	0.038	15.658	0.000
K39	0.640	0.037	17.405	0.000
POSPAR BY				
C1	0.638	0.037	17.183	0.000
C2	0.883	0.027	33.300	0.000
C3	0.805	0.028	28.622	0.000
PARMH BY				
K1	0.607	0.041	14.645	0.000
K5	0.578	0.038	15.108	0.000
K6	0.703	0.040	17.517	0.000
SOCSUP BY				
K12	0.451	0.056	8.073	0.000
K13	0.542	0.052	10.458	0.000
K15	0.583	0.039	14.806	0.000
K16	0.651	0.047	13.906	0.000
K17	0.539	0.050	10.751	0.000
ACAD BY				
AAAD	0.748	0.043	17.585	0.000
AACON	0.680	0.039	17.541	0.000
AASI	0.510	0.040	12.716	0.000
POSPAR ON				
MATHARD	0.003	0.046	0.060	0.952
PARMH ON				
MATHARD	0.544	0.051	10.622	0.000
SOCSUP ON				
MATHARD	-0.178	0.053	-3.365	0.001
ACAD ON				
MATHARD	-0.014	0.081	-0.175	0.861
POSPAR	0.115	0.050	2.277	0.023

PARMH	-0.301	0.087	-3.458	0.001
SOCSUP	0.051	0.060	0.852	0.394
POSPAR WITH				
PARMH	-0.082	0.062	-1.336	0.181
SOCSUP	0.076	0.051	1.499	0.134
PARMH WITH				
SOCSUP	-0.130	0.061	-2.137	0.033
Intercepts				
C1	7.510	0.266	28.221	0.000
C2	7.766	0.312	24.928	0.000
C3	6.383	0.218	29.306	0.000
K1	0.587	0.026	22.880	0.000
K5	0.926	0.035	26.676	0.000
K6	0.653	0.027	24.466	0.000
K12	2.017	0.052	38.777	0.000
K13	2.259	0.052	43.481	0.000
K15	2.135	0.046	46.206	0.000
K16	2.973	0.082	36.433	0.000
K17	2.272	0.047	48.105	0.000
K39	2.968	0.080	37.164	0.000
AAAD	4.587	0.194	23.627	0.000
AACON	3.104	0.080	38.639	0.000
AASI	4.745	0.196	24.243	0.000
MHBN	0.605	0.023	26.288	0.000
MHFP	0.700	0.024	29.160	0.000
Variances				
MATHARD	1.000	0.000	999.000	999.000
Residual Variances				
C1	0.593	0.047	12.535	0.000
C2	0.221	0.047	4.723	0.000
C3	0.353	0.045	7.819	0.000
K1	0.632	0.050	12.575	0.000
K5	0.666	0.044	15.076	0.000
K6	0.506	0.056	8.967	0.000
K12	0.796	0.051	15.761	0.000
K13	0.707	0.056	12.551	0.000
K15	0.660	0.046	14.443	0.000
K16	0.576	0.060	9.516	0.000
K17	0.710	0.053	13.387	0.000
K39	0.591	0.047	12.612	0.000
AAAD	0.441	0.064	6.938	0.000

AACON	0.537	0.053	10.165	0.000
AASI	0.740	0.041	18.121	0.000
MHBN	0.649	0.045	14.523	0.000
MHFP	0.311	0.052	5.983	0.000
POSPAR	1.000	0.003	339.426	0.000
PARMH	0.704	0.055	12.685	0.000
SOCSUP	0.968	0.019	50.722	0.000
ACAD	0.877	0.038	22.829	0.000

STDY Standardization

	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
MATHARD BY				
MHFP	0.830	0.031	26.485	0.000
MHBN	0.593	0.038	15.658	0.000
K39	0.640	0.037	17.405	0.000
POSPAR BY				
C1	0.638	0.037	17.183	0.000
C2	0.883	0.027	33.300	0.000
C3	0.805	0.028	28.622	0.000
PARMH BY				
K1	0.607	0.041	14.645	0.000
K5	0.578	0.038	15.108	0.000
K6	0.703	0.040	17.517	0.000
SOCSUP BY				
K12	0.451	0.056	8.073	0.000
K13	0.542	0.052	10.458	0.000
K15	0.583	0.039	14.806	0.000
K16	0.651	0.047	13.906	0.000
K17	0.539	0.050	10.751	0.000
ACAD BY				
AAAD	0.748	0.043	17.585	0.000
AACON	0.680	0.039	17.541	0.000
AASI	0.510	0.040	12.716	0.000
POSPAR ON				
MATHARD	0.003	0.046	0.060	0.952
PARMH ON				

MATHARD	0.544	0.051	10.622	0.000
SOCSUP ON				
MATHARD	-0.178	0.053	-3.365	0.001
ACAD ON				
MATHARD	-0.014	0.081	-0.175	0.861
POSPAR	0.115	0.050	2.277	0.023
PARMH	-0.301	0.087	-3.458	0.001
SOCSUP	0.051	0.060	0.852	0.394
POSPAR WITH				
PARMH	-0.082	0.062	-1.336	0.181
SOCSUP	0.076	0.051	1.499	0.134
PARMH WITH				
SOCSUP	-0.130	0.061	-2.137	0.033
Intercepts				
C1	7.510	0.266	28.221	0.000
C2	7.766	0.312	24.928	0.000
C3	6.383	0.218	29.306	0.000
K1	0.587	0.026	22.880	0.000
K5	0.926	0.035	26.676	0.000
K6	0.653	0.027	24.466	0.000
K12	2.017	0.052	38.777	0.000
K13	2.259	0.052	43.481	0.000
K15	2.135	0.046	46.206	0.000
K16	2.973	0.082	36.433	0.000
K17	2.272	0.047	48.105	0.000
K39	2.968	0.080	37.164	0.000
AAAD	4.587	0.194	23.627	0.000
AACON	3.104	0.080	38.639	0.000
AASI	4.745	0.196	24.243	0.000
MHBN	0.605	0.023	26.288	0.000
MHFP	0.700	0.024	29.160	0.000
Variances				
MATHARD	1.000	0.000	999.000	999.000
Residual Variances				
C1	0.593	0.047	12.535	0.000
C2	0.221	0.047	4.723	0.000
C3	0.353	0.045	7.819	0.000
K1	0.632	0.050	12.575	0.000
K5	0.666	0.044	15.076	0.000

K6	0.506	0.056	8.967	0.000
K12	0.796	0.051	15.761	0.000
K13	0.707	0.056	12.551	0.000
K15	0.660	0.046	14.443	0.000
K16	0.576	0.060	9.516	0.000
K17	0.710	0.053	13.387	0.000
K39	0.591	0.047	12.612	0.000
AAAD	0.441	0.064	6.938	0.000
AACON	0.537	0.053	10.165	0.000
AASI	0.740	0.041	18.121	0.000
MHBN	0.649	0.045	14.523	0.000
MHFP	0.311	0.052	5.983	0.000
POSPAR	1.000	0.003	339.426	0.000
PARMH	0.704	0.055	12.685	0.000
SOCSUP	0.968	0.019	50.722	0.000
ACAD	0.877	0.038	22.829	0.000

STD Standardization

	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
MATHARD BY				
MHFP	1.776	0.091	19.507	0.000
MHBN	0.619	0.045	13.892	0.000
K39	0.564	0.035	16.211	0.000
POSPAR BY				
C1	0.377	0.029	12.837	0.000
C2	0.518	0.028	18.316	0.000
C3	0.558	0.027	20.327	0.000
PARMH BY				
K1	0.265	0.020	13.333	0.000
K5	0.288	0.019	15.127	0.000
K6	0.322	0.020	16.348	0.000
SOCSUP BY				
K12	0.730	0.091	8.022	0.000
K13	0.756	0.074	10.214	0.000
K15	0.795	0.058	13.757	0.000
K16	0.787	0.061	12.815	0.000
K17	0.638	0.064	9.972	0.000
ACAD BY				

AAAD	1.370	0.102	13.447	0.000
AACON	0.478	0.030	15.781	0.000
AASI	0.569	0.053	10.654	0.000
POSPAR ON				
MATHARD	0.003	0.046	0.060	0.952
PARMH ON				
MATHARD	0.544	0.051	10.622	0.000
SOCSUP ON				
MATHARD	-0.178	0.053	-3.365	0.001
ACAD ON				
MATHARD	-0.014	0.081	-0.175	0.861
POSPAR	0.115	0.050	2.277	0.023
PARMH	-0.301	0.087	-3.458	0.001
SOCSUP	0.051	0.060	0.852	0.394
POSPAR WITH				
PARMH	-0.082	0.062	-1.336	0.181
SOCSUP	0.076	0.051	1.499	0.134
PARMH WITH				
SOCSUP	-0.130	0.061	-2.137	0.033
Intercepts				
C1	4.435	0.022	199.960	0.000
C2	4.556	0.022	207.723	0.000
C3	4.428	0.026	169.480	0.000
K1	0.256	0.017	15.399	0.000
K5	0.461	0.019	24.809	0.000
K6	0.299	0.017	17.495	0.000
K12	3.262	0.062	53.023	0.000
K13	3.152	0.053	59.393	0.000
K15	2.912	0.051	56.541	0.000
K16	3.593	0.045	79.527	0.000
K17	2.692	0.046	59.148	0.000
K39	2.618	0.034	76.259	0.000
AAAD	8.402	0.068	124.224	0.000
AACON	2.183	0.026	83.540	0.000
AASI	5.293	0.041	129.924	0.000
MHBN	0.632	0.039	16.016	0.000
MHFP	1.498	0.082	18.354	0.000
Variances				

MATHARD	1.000	0.000	999.000	999.000

Residual Variances

C1	0.207	0.017	12.468	0.000
C2	0.076	0.015	5.026	0.000
C3	0.170	0.023	7.507	0.000
K1	0.120	0.010	12.019	0.000
K5	0.166	0.011	14.989	0.000
K6	0.106	0.012	8.911	0.000
K12	2.083	0.141	14.766	0.000
K13	1.376	0.115	11.989	0.000
K15	1.227	0.087	14.099	0.000
K16	0.840	0.089	9.482	0.000
K17	0.996	0.078	12.733	0.000
K39	0.459	0.043	10.771	0.000
AAAD	1.479	0.212	6.989	0.000
AACON	0.266	0.026	10.076	0.000
AASI	0.921	0.069	13.311	0.000
MHBN	0.707	0.066	10.708	0.000
MHFP	1.426	0.239	5.965	0.000
POSPAR	1.000	0.003	339.426	0.000
PARMH	0.704	0.055	12.685	0.000
SOCSUP	0.968	0.019	50.722	0.000
ACAD	0.877	0.038	22.829	0.000

R-SQUARE

Observed Variable	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
C1	0.407	0.047	8.619	0.000
C2	0.779	0.047	16.668	0.000
C3	0.647	0.045	14.352	0.000
K1	0.368	0.050	7.327	0.000
K5	0.334	0.044	7.566	0.000
K6	0.494	0.056	8.756	0.000
K12	0.204	0.051	4.031	0.000
K13	0.293	0.056	5.212	0.000
K15	0.340	0.046	7.448	0.000
K16	0.424	0.060	7.017	0.000
K17	0.290	0.053	5.477	0.000
K39	0.409	0.047	8.744	0.000
AAAD	0.559	0.064	8.799	0.000
AACON	0.463	0.053	8.756	0.000
AASI	0.260	0.041	6.370	0.000

MHBN	0.351	0.045	7.867	0.000
MHFP	0.689	0.052	13.232	0.000

Latent Variable	Estimate	S.E.	Two-Tailed Est./S.E.	P-Value
POSPAR	0.000	0.003	0.003	0.998
PARMH	0.296	0.055	5.344	0.000
SOCSUP	0.032	0.019	1.669	0.095
ACAD	0.123	0.038	3.214	0.001

TOTAL, TOTAL INDIRECT, SPECIFIC INDIRECT, AND DIRECT EFFECTS

	Estimate	S.E.	Two-Tailed Est./S.E.	P-Value
Effects from MATHARD to ACAD				
Sum of indirect	-0.133	0.041	-3.240	0.001
Specific indirect				
ACAD POSPAR MATHARD	0.000	0.004	0.055	0.956
ACAD PARMH MATHARD	-0.127	0.041	-3.065	0.002
ACAD SOCSUP MATHARD	-0.007	0.009	-0.798	0.425

STANDARDIZED TOTAL, TOTAL INDIRECT, SPECIFIC INDIRECT, AND DIRECT EFFECTS

STDYX Standardization

	Estimate	S.E.	Two-Tailed Est./S.E.	P-Value

Effects from MATHARD to ACAD

Sum of indirect	-0.173	0.053	-3.269	0.001
Specific indirect				
ACAD POSPAR MATHARD	0.000	0.006	0.055	0.956
ACAD PARMH MATHARD	-0.164	0.053	-3.082	0.002
ACAD SOCSUP MATHARD	-0.009	0.011	-0.808	0.419

STDY Standardization

			Two-Tailed
Estimate	S.E.	Est./S.E.	P-Value

Effects from MATHARD to ACAD

Sum of indirect	-0.173	0.053	-3.269	0.001
Specific indirect				
ACAD POSPAR MATHARD	0.000	0.006	0.055	0.956
ACAD PARMH MATHARD	-0.164	0.053	-3.082	0.002
ACAD SOCSUP MATHARD	-0.009	0.011	-0.808	0.419

STD Standardization

			Two-Tailed	
	Estimate	S.E.	Est./S.E.	P-Value
Effects from MATHARD to ACAD				
Sum of indirect	-0.173	0.053	-3.269	0.001
Specific indirect				
ACAD POSPAR MATHARD	0.000	0.006	0.055	0.956
ACAD PARMH MATHARD	-0.164	0.053	-3.082	0.002
ACAD SOCSUP MATHARD	-0.009	0.011	-0.808	0.419

Beginning Time: 09:53:37
Ending Time: 09:54:34
Elapsed Time: 00:00:57

MUTHEN & MUTHEN
3463 Stoner Ave.
Los Angeles, CA 90066

Tel: (310) 391-9971
Fax: (310) 391-8971
Web: www.StatModel.com
Support: Support@StatModel.com

APPENDIX C

Power Analysis Mplus Syntax and Output

```
Mplus VERSION 8.2 (Mac)
MUTHEN & MUTHEN
11/11/2019  10:17 AM

INPUT INSTRUCTIONS

  TITLE: Montecarlo Post Hoc
  MONTECARLO:
  NAMES =
  C1, C2, C3, K1, K5, K6, K12, K13, K15, K16, K17, K39, AAad, AAcon, AAsi, MHbn, MHfp;
  NOBSERVATIONS = 723; !choose desired sample size (vary);
  NREPS = 5000; !use at least 500 samples for stability of estimates;
  SEED = 060418; !can reproduce the data if same seed is used;
  ANALYSIS: estimator = ml;
  MODEL = nomeanstructure; information=expected;
  MODEL POPULATION:
  MatHard BY MHfp*.830, MHbn*.593, K39*.640;
  PosPar BY C1*.638, C2*.883, C3*.805;
  ParMH BY K1*.607, K5*.578, K6*.703;
  SocSup BY K12*.451, K13*.542, K15*.583, K16*.651, K17*.539;
  AcAd BY AAad*.748, AAcon*.680, AAsi*.510;
  MatHard@1; !set factor variance to one (standardize);
  !using 1-loading squared for measurement residuals;
  MHfp*.311, MHbn*.649, K39*.591;
  C1*.593, C2*.221, C3*.353;
  K1*.632, K5*.666, K6*.506;
  K12*.796, K13*.707, K15*.660, K16*.576, K17*.710;
  AAad*.441, AAcon*.537, AAsi*.740;
  PosPar ON MatHard*.003;
  ParMH ON MatHard*.544;
  SocSup ON MatHard*-.178;
  AcAd ON MatHard*-.014;
  AcAd ON PosPar*.115;
  AcAd ON ParMH*-.301;
  AcAd ON SocSup*.051;
  PosPar WITH ParMH*-.082 SocSup*.076;
  ParMH WITH SocSup*-.130;
  PosPar@1.00;
  ParMH@.704;
  SocSup@.968;
  AcAd@.877;
```

```
MODEL:
MatHard BY MHfp*.830, MHbn*.593, K39*.640;
PosPar BY C1*.638, C2*.883, C3*.805;
ParMH BY K1*.607, K5*.578, K6*.703;
SocSup BY K12*.451, K13*.542, K15*.583, K16*.651, K17*.539;
AcAd BY AAad*.748, AAcon*.680, AAsi*.510;
MatHard@1; !set factor variance to one (standardize);
!using 1-loading squared for measurement residuals;
MHfp*.311, MHbn*.649, K39*.591;
C1*.593, C2*.221, C3*.353;
K1*.632, K5*.666, K6*.506;
K12*.796, K13*.707, K15*.660, K16*.576, K17*.710;
AAad*.441, AAcon*.537, AAsi*.740;
PosPar ON MatHard*.003;
ParMH ON MatHard*.544;
SocSup ON MatHard*-.178;
AcAd ON MatHard*-.014;
AcAd ON PosPar*.115;
AcAd ON ParMH*-.301;
AcAd ON SocSup*.051;
PosPar WITH ParMH*-.082 SocSup*.076;
ParMH WITH SocSup*-.130;
PosPar@1.00;
ParMH@.704;
SocSup@.968;
AcAd@.877;

MODEL INDIRECT:
AcAd IND PosPar MatHard;
AcAd IND ParMH MatHard;
AcAd IND SocSup MatHard;

OUTPUT: tech9;
```

INPUT READING TERMINATED NORMALLY

Montecarlo Post Hoc

SUMMARY OF ANALYSIS

Number of groups	1
Number of observations	723

Number of replications
Requested 5000
Completed 5000
Value of seed 60418

Number of dependent variables 17
Number of independent variables 0
Number of continuous latent variables 5

Observed dependent variables

Continuous
C1 C2 C3 K1 K5 K6
K12 K13 K15 K16 K17 K39
AAAD AACON AASI MHBN MHFP

Continuous latent variables
MATHARD POSPAR PARMH SOCSUP ACAD

Estimator ML
Information matrix EXPECTED
Maximum number of iterations 1000
Convergence criterion 0.500D-04
Maximum number of steepest descent iterations 20

SAMPLE STATISTICS FOR THE FIRST REPLICATION

SAMPLE STATISTICS

Covariances/Correlations/Residual Correlations

	C1	C2	C3	K1	K5
C1	0.973				
C2	0.543	0.987			
C3	0.541	0.705	0.991		
K1	0.016	-0.010	-0.007	0.905	
K5	0.020	0.008	0.012	0.322	0.952
K6	0.039	-0.060	-0.084	0.368	0.385
K12	0.061	0.079	0.046	-0.056	-0.043
K13	0.078	0.053	0.053	-0.082	-0.077

K15	0.094	0.086	0.102	-0.039	-0.101
K16	0.084	0.060	0.050	-0.115	-0.074
K17	0.057	0.031	0.019	-0.086	-0.025
K39	-0.004	-0.012	-0.055	0.225	0.205
AAAD	0.041	0.039	0.055	-0.087	-0.083
AACON	-0.007	0.059	0.073	-0.096	-0.108
AASI	-0.002	0.009	0.019	-0.044	-0.106
MHBN	0.023	0.048	-0.011	0.232	0.245
MHFP	0.033	0.047	-0.004	0.301	0.339

Covariances/Correlations/Residual Correlations

	K6	K12	K13	K15	K16
K6	1.039				
K12	-0.062	0.980			
K13	-0.105	0.265	1.048		
K15	-0.101	0.282	0.314	0.982	
K16	-0.109	0.247	0.368	0.431	1.056
K17	-0.064	0.210	0.295	0.290	0.333
K39	0.243	-0.111	-0.143	-0.060	-0.052
AAAD	-0.123	0.000	0.016	0.071	0.034
AACON	-0.150	0.063	-0.018	0.103	0.079
AASI	-0.068	0.024	-0.043	0.050	0.050
MHBN	0.245	-0.083	-0.113	-0.092	-0.070
MHFP	0.351	-0.051	-0.111	-0.053	-0.082

Covariances/Correlations/Residual Correlations

	K17	K39	AAAD	AACON	AASI
K17	0.967				
K39	-0.016	1.026			
AAAD	-0.010	-0.047	0.925		
AACON	-0.025	-0.039	0.462	0.969	
AASI	0.049	-0.033	0.281	0.269	0.935
MHBN	-0.024	0.372	-0.107	-0.103	-0.083
MHFP	-0.002	0.599	-0.073	-0.059	-0.074

Covariances/Correlations/Residual Correlations

	MHBN	MHFP
MHBN	1.011	
MHFP	0.510	1.044

MODEL FIT INFORMATION

Number of Free Parameters 44

Loglikelihood

H0 Value

Mean -16097.124
Std Dev 77.202
Number of successful computations 5000

Proportions		Percentiles	
Expected	Observed	Expected	Observed
0.990	0.992	-16276.718	-16271.066
0.980	0.980	-16255.673	-16256.528
0.950	0.946	-16224.113	-16226.159
0.900	0.899	-16196.065	-16196.704
0.800	0.798	-16162.097	-16162.724
0.700	0.699	-16137.608	-16137.766
0.500	0.501	-16097.124	-16096.819
0.300	0.303	-16056.639	-16056.046
0.200	0.205	-16032.151	-16030.829
0.100	0.103	-15998.182	-15997.149
0.050	0.048	-15970.135	-15972.481
0.020	0.019	-15938.575	-15941.192
0.010	0.009	-15917.530	-15925.076

H1 Value

Mean -16042.064
Std Dev 77.424
Number of successful computations 5000

Proportions		Percentiles	
Expected	Observed	Expected	Observed
0.990	0.991	-16222.175	-16215.655
0.980	0.981	-16201.069	-16200.426
0.950	0.949	-16169.418	-16170.140
0.900	0.898	-16141.290	-16141.957
0.800	0.798	-16107.223	-16107.644
0.700	0.699	-16082.665	-16082.920
0.500	0.502	-16042.064	-16041.764
0.300	0.302	-16001.462	-16001.057
0.200	0.206	-15976.904	-15975.652

0.100	0.103	-15942.837	-15941.675
0.050	0.048	-15914.709	-15916.321
0.020	0.018	-15883.058	-15884.580
0.010	0.008	-15861.952	-15865.636

Information Criteria

Akaike (AIC)

Mean	32282.247
Std Dev	154.403
Number of successful computations	5000

Proportions		Percentiles	
Expected	Observed	Expected	Observed
0.990	0.991	31923.059	31937.151
0.980	0.981	31965.150	31968.518
0.950	0.952	32028.270	32032.850
0.900	0.897	32084.364	32082.241
0.800	0.795	32152.302	32149.290
0.700	0.697	32201.278	32200.058
0.500	0.499	32282.247	32281.630
0.300	0.301	32363.217	32363.512
0.200	0.202	32412.193	32413.054
0.100	0.101	32480.131	32480.741
0.050	0.054	32536.225	32540.059
0.020	0.020	32599.345	32599.705
0.010	0.008	32641.436	32630.010

Bayesian (BIC)

Mean	32483.917
Std Dev	154.403
Number of successful computations	5000

Proportions		Percentiles	
Expected	Observed	Expected	Observed
0.990	0.991	32124.729	32138.821
0.980	0.981	32166.820	32170.188
0.950	0.952	32229.940	32234.520
0.900	0.897	32286.034	32283.911
0.800	0.795	32353.972	32350.960
0.700	0.697	32402.948	32401.728
0.500	0.499	32483.917	32483.300
0.300	0.301	32564.887	32565.182
0.200	0.202	32613.863	32614.724

0.100	0.101	32681.801	32682.411
0.050	0.054	32737.895	32741.729
0.020	0.020	32801.015	32801.375
0.010	0.008	32843.106	32831.680

Sample-Size Adjusted BIC (n* = (n + 2) / 24)

Mean	32344.205
Std Dev	154.403
Number of successful computations	5000

Proportions		Percentiles	
Expected	Observed	Expected	Observed
0.990	0.991	31985.017	31999.108
0.980	0.981	32027.107	32030.476
0.950	0.952	32090.227	32094.807
0.900	0.897	32146.322	32144.198
0.800	0.795	32214.259	32211.247
0.700	0.697	32263.236	32262.015
0.500	0.499	32344.205	32343.587
0.300	0.301	32425.174	32425.469
0.200	0.202	32474.150	32475.011
0.100	0.101	32542.088	32542.698
0.050	0.054	32598.182	32602.016
0.020	0.020	32661.302	32661.662
0.010	0.008	32703.393	32691.967

Chi-Square Test of Model Fit

Degrees of freedom	109

Mean	110.120
Std Dev	14.897
Number of successful computations	5000

Proportions		Percentiles	
Expected	Observed	Expected	Observed
0.990	0.994	77.616	79.025
0.980	0.985	80.862	82.545
0.950	0.960	85.903	86.900
0.900	0.913	90.558	91.430
0.800	0.818	96.419	97.480
0.700	0.723	100.801	101.837
0.500	0.527	108.334	109.233
0.300	0.324	116.233	117.345
0.200	0.216	121.192	122.248

0.100	0.117	128.298	130.083
0.050	0.064	134.369	136.339
0.020	0.027	141.423	143.923
0.010	0.012	146.257	147.170

RMSEA (Root Mean Square Error Of Approximation)

Mean	0.006
Std Dev	0.007
Number of successful computations	5000

Proportions		Percentiles	
Expected	Observed	Expected	Observed
0.990	1.000	-0.010	0.000
0.980	1.000	-0.008	0.000
0.950	1.000	-0.005	0.000
0.900	1.000	-0.003	0.000
0.800	0.507	0.000	0.000
0.700	0.496	0.002	0.000
0.500	0.434	0.006	0.002
0.300	0.326	0.010	0.010
0.200	0.247	0.012	0.013
0.100	0.142	0.015	0.016
0.050	0.080	0.017	0.019
0.020	0.031	0.020	0.021
0.010	0.011	0.022	0.022

SRMR (Standardized Root Mean Square Residual)

Mean	0.026
Std Dev	0.002
Number of successful computations	5000

Proportions		Percentiles	
Expected	Observed	Expected	Observed
0.990	0.996	0.021	0.021
0.980	0.988	0.022	0.022
0.950	0.961	0.022	0.023
0.900	0.903	0.023	0.023
0.800	0.789	0.024	0.024
0.700	0.694	0.025	0.025
0.500	0.485	0.026	0.026
0.300	0.290	0.027	0.027
0.200	0.199	0.028	0.028
0.100	0.104	0.029	0.029
0.050	0.056	0.029	0.030

0.020	0.026	0.030	0.031
0.010	0.015	0.031	0.031

MODEL RESULTS

	ESTIMATES		S. E.	M. S. E.	95%	% Sig
	Population	Average	Std. Dev.	Average	Cover	Coeff
MATHARD BY						
MHFP	0.830	0.8302	0.0394	0.0392	0.0016	0.946 1.000
MHBN	0.593	0.5918	0.0397	0.0390	0.0016	0.947 1.000
K39	0.640	0.6389	0.0401	0.0389	0.0016	0.943 1.000
POSPAR BY						
C1	0.638	0.6361	0.0362	0.0358	0.0013	0.947 1.000
C2	0.883	0.8815	0.0345	0.0346	0.0012	0.949 1.000
C3	0.805	0.8033	0.0345	0.0351	0.0012	0.952 1.000
PARMH BY						
K1	0.607	0.6060	0.0454	0.0447	0.0021	0.946 1.000
K5	0.578	0.5777	0.0453	0.0444	0.0020	0.946 1.000
K6	0.703	0.7024	0.0469	0.0472	0.0022	0.950 1.000
SOCSUP BY						
K12	0.451	0.4491	0.0428	0.0424	0.0018	0.950 1.000
K13	0.542	0.5405	0.0423	0.0419	0.0018	0.949 1.000
K15	0.583	0.5814	0.0418	0.0417	0.0018	0.950 1.000
K16	0.651	0.6492	0.0422	0.0416	0.0018	0.945 1.000
K17	0.539	0.5371	0.0425	0.0419	0.0018	0.946 1.000
ACAD BY						
AAAD	0.748	0.7436	0.0471	0.0464	0.0022	0.943 1.000
AACON	0.680	0.6760	0.0450	0.0444	0.0020	0.942 1.000
AASI	0.510	0.5066	0.0424	0.0421	0.0018	0.946 1.000
POSPAR ON						
MATHARD	0.003	0.0031	0.0451	0.0455	0.0020	0.953 0.049
PARMH ON						
MATHARD	0.544	0.5451	0.0606	0.0601	0.0037	0.951 1.000
SOCSUP ON						
MATHARD	-0.178	-0.1789	0.0507	0.0510	0.0026	0.956 0.944
ACAD ON						
MATHARD	-0.014	-0.0128	0.0673	0.0663	0.0045	0.948 0.057

POSPAR	0.115	0.1155	0.0474	0.0475	0.0022	0.948	0.687
PARMH	-0.301	-0.3033	0.0757	0.0739	0.0057	0.949	0.987
SOCSUP	0.051	0.0513	0.0555	0.0542	0.0031	0.945	0.157
POSPAR WITH							
PARMH	-0.082	-0.0824	0.0454	0.0449	0.0021	0.948	0.448
SOCSUP	0.076	0.0763	0.0480	0.0473	0.0023	0.947	0.370
PARMH WITH							
SOCSUP	-0.130	-0.1293	0.0485	0.0488	0.0024	0.947	0.758
Variances							
MATHARD	1.000	1.0000	0.0000	0.0000	0.0000	1.000	0.000
Residual Variances							
C1	0.593	0.5907	0.0358	0.0357	0.0013	0.944	1.000
C2	0.221	0.2198	0.0357	0.0353	0.0013	0.950	1.000
C3	0.353	0.3518	0.0336	0.0333	0.0011	0.945	1.000
K1	0.632	0.6292	0.0448	0.0443	0.0020	0.943	1.000
K5	0.666	0.6632	0.0454	0.0445	0.0021	0.941	1.000
K6	0.506	0.5024	0.0459	0.0456	0.0021	0.947	1.000
K12	0.796	0.7924	0.0471	0.0468	0.0022	0.942	1.000
K13	0.707	0.7041	0.0455	0.0451	0.0021	0.944	1.000
K15	0.660	0.6590	0.0443	0.0446	0.0020	0.951	1.000
K16	0.576	0.5738	0.0440	0.0443	0.0019	0.951	1.000
K17	0.710	0.7074	0.0450	0.0452	0.0020	0.948	1.000
K39	0.591	0.5889	0.0407	0.0405	0.0017	0.950	1.000
AAAD	0.441	0.4380	0.0534	0.0525	0.0029	0.949	1.000
AACON	0.537	0.5350	0.0492	0.0483	0.0024	0.947	1.000
AASI	0.740	0.7372	0.0462	0.0455	0.0021	0.942	1.000
MHBN	0.649	0.6472	0.0412	0.0412	0.0017	0.949	1.000
MHFP	0.311	0.3084	0.0449	0.0448	0.0020	0.954	1.000
POSPAR	1.000	1.0000	0.0000	0.0000	0.0000	1.000	0.000
PARMH	0.704	0.7040	0.0000	0.0000	0.0000	1.000	0.000
SOCSUP	0.968	0.9680	0.0000	0.0000	0.0000	1.000	0.000
ACAD	0.877	0.8770	0.0000	0.0000	0.0000	1.000	0.000

QUALITY OF NUMERICAL RESULTS

Average Condition Number for the Information Matrix 0.372E-01
(ratio of smallest to largest eigenvalue)

TOTAL, TOTAL INDIRECT, SPECIFIC INDIRECT, AND DIRECT EFFECTS

	ESTIMATES		S. E.	M. S. E.	95%	% Sig
Population	Average	Std. Dev.	Average		Cover	Coeff
Effects from MATHARD to ACAD						
Sum indirect	-0.172	-0.1740	0.0453	0.0445	0.0021	0.949 0.993
Specific indirect						
ACAD POSPAR MATHARD	0.000	0.0004	0.0056	0.0057	0.0000	0.992 0.007
ACAD PARMH MATHARD	-0.164	-0.1652	0.0450	0.0440	0.0020	0.943 0.987
ACAD SOCSUP MATHARD	-0.009	-0.0092	0.0106	0.0104	0.0001	0.954 0.070

TECHNICAL OUTPUT

PARAMETER SPECIFICATION

LAMBDA

	MATHARD	POSPAR	PARMH	SOCSUP	ACAD
C1	0	1	0	0	0
C2	0	2	0	0	0
C3	0	3	0	0	0
K1	0	0	4	0	0
K5	0	0	5	0	0
K6	0	0	6	0	0
K12	0	0	0	7	0
K13	0	0	0	8	0
K15	0	0	0	9	0
K16	0	0	0	10	0
K17	0	0	0	11	0
K39	12	0	0	0	0
AAAD	0	0	0	0	13

AACON	0	0	0	0	14
AASI	0	0	0	0	15
MHBN	16	0	0	0	0
MHFP	17	0	0	0	0

THETA

	C1	C2	C3	K1	K5
C1	18				
C2	0	19			
C3	0	0	20		
K1	0	0	0	21	
K5	0	0	0	0	22
K6	0	0	0	0	0
K12	0	0	0	0	0
K13	0	0	0	0	0
K15	0	0	0	0	0
K16	0	0	0	0	0
K17	0	0	0	0	0
K39	0	0	0	0	0
AAAD	0	0	0	0	0
AACON	0	0	0	0	0
AASI	0	0	0	0	0
MHBN	0	0	0	0	0
MHFP	0	0	0	0	0

THETA

	K6	K12	K13	K15	K16
K6	23				
K12	0	24			
K13	0	0	25		
K15	0	0	0	26	
K16	0	0	0	0	27
K17	0	0	0	0	0
K39	0	0	0	0	0
AAAD	0	0	0	0	0
AACON	0	0	0	0	0
AASI	0	0	0	0	0
MHBN	0	0	0	0	0
MHFP	0	0	0	0	0

THETA

	K17	K39	AAAD	AACON	AASI
K17	28				
K39	0	29			
AAAD	0	0	30		
AACON	0	0	0	31	
AASI	0	0	0	0	32
MHBN	0	0	0	0	0
MHFP	0	0	0	0	0

THETA

	MHBN	MHFP
MHBN	33	
MHFP	0	34

BETA

	MATHARD	POSPAR	PARMH	SOCSUP	ACAD
MATHARD	0	0	0	0	0
POSPAR	35	0	0	0	0
PARMH	36	0	0	0	0
SOCSUP	37	0	0	0	0
ACAD	38	39	40	41	0

PSI

	MATHARD	POSPAR	PARMH	SOCSUP	ACAD
MATHARD	0				
POSPAR	0	0			
PARMH	0	42	0		
SOCSUP	0	43	44	0	
ACAD	0	0	0	0	0

STARTING VALUES

LAMBDA

	MATHARD	POSPAR	PARMH	SOCSUP	ACAD
C1	0.000	0.638	0.000	0.000	0.000
C2	0.000	0.883	0.000	0.000	0.000

C3	0.000	0.805	0.000	0.000	0.000
K1	0.000	0.000	0.607	0.000	0.000
K5	0.000	0.000	0.578	0.000	0.000
K6	0.000	0.000	0.703	0.000	0.000
K12	0.000	0.000	0.000	0.451	0.000
K13	0.000	0.000	0.000	0.542	0.000
K15	0.000	0.000	0.000	0.583	0.000
K16	0.000	0.000	0.000	0.651	0.000
K17	0.000	0.000	0.000	0.539	0.000
K39	0.640	0.000	0.000	0.000	0.000
AAAD	0.000	0.000	0.000	0.000	0.748
AACON	0.000	0.000	0.000	0.000	0.680
AASI	0.000	0.000	0.000	0.000	0.510
MHBN	0.593	0.000	0.000	0.000	0.000
MHFP	0.830	0.000	0.000	0.000	0.000

THETA

	C1	C2	C3	K1	K5
C1	0.593				
C2	0.000	0.221			
C3	0.000	0.000	0.353		
K1	0.000	0.000	0.000	0.632	
K5	0.000	0.000	0.000	0.000	0.666
K6	0.000	0.000	0.000	0.000	0.000
K12	0.000	0.000	0.000	0.000	0.000
K13	0.000	0.000	0.000	0.000	0.000
K15	0.000	0.000	0.000	0.000	0.000
K16	0.000	0.000	0.000	0.000	0.000
K17	0.000	0.000	0.000	0.000	0.000
K39	0.000	0.000	0.000	0.000	0.000
AAAD	0.000	0.000	0.000	0.000	0.000
AACON	0.000	0.000	0.000	0.000	0.000
AASI	0.000	0.000	0.000	0.000	0.000
MHBN	0.000	0.000	0.000	0.000	0.000
MHFP	0.000	0.000	0.000	0.000	0.000

THETA

	K6	K12	K13	K15	K16
K6	0.506				
K12	0.000	0.796			
K13	0.000	0.000	0.707		
K15	0.000	0.000	0.000	0.660	

K16	0.000	0.000	0.000	0.000	0.576
K17	0.000	0.000	0.000	0.000	0.000
K39	0.000	0.000	0.000	0.000	0.000
AAAD	0.000	0.000	0.000	0.000	0.000
AACON	0.000	0.000	0.000	0.000	0.000
AASI	0.000	0.000	0.000	0.000	0.000
MHBN	0.000	0.000	0.000	0.000	0.000
MHFP	0.000	0.000	0.000	0.000	0.000

THETA

	K17	K39	AAAD	AACON	AASI
K17	0.710				
K39	0.000	0.591			
AAAD	0.000	0.000	0.441		
AACON	0.000	0.000	0.000	0.537	
AASI	0.000	0.000	0.000	0.000	0.740
MHBN	0.000	0.000	0.000	0.000	0.000
MHFP	0.000	0.000	0.000	0.000	0.000

THETA

	MHBN	MHFP
MHBN	0.649	
MHFP	0.000	0.311

BETA

	MATHARD	POSPAR	PARMH	SOCSUP	ACAD
MATHARD	0.000	0.000	0.000	0.000	0.000
POSPAR	0.003	0.000	0.000	0.000	0.000
PARMH	0.544	0.000	0.000	0.000	0.000
SOCSUP	-0.178	0.000	0.000	0.000	0.000
ACAD	-0.014	0.115	-0.301	0.051	0.000

PSI

	MATHARD	POSPAR	PARMH	SOCSUP	ACAD
MATHARD	1.000				
POSPAR	0.000	1.000			
PARMH	0.000	-0.082	0.704		
SOCSUP	0.000	0.076	-0.130	0.968	

ACAD	0.000	0.000	0.000	0.000	0.877

POPULATION VALUES

NU

C1	C2	C3	K1	K5
0.000	0.000	0.000	0.000	0.000

NU

K6	K12	K13	K15	K16
0.000	0.000	0.000	0.000	0.000

NU

K17	K39	AAAD	AACON	AASI
0.000	0.000	0.000	0.000	0.000

NU

MHBN	MHFP
0.000	0.000

LAMBDA

	MATHARD	POSPAR	PARMH	SOCSUP	ACAD
C1	0.000	0.638	0.000	0.000	0.000
C2	0.000	0.883	0.000	0.000	0.000
C3	0.000	0.805	0.000	0.000	0.000
K1	0.000	0.000	0.607	0.000	0.000
K5	0.000	0.000	0.578	0.000	0.000
K6	0.000	0.000	0.703	0.000	0.000
K12	0.000	0.000	0.000	0.451	0.000
K13	0.000	0.000	0.000	0.542	0.000
K15	0.000	0.000	0.000	0.583	0.000
K16	0.000	0.000	0.000	0.651	0.000
K17	0.000	0.000	0.000	0.539	0.000
K39	0.640	0.000	0.000	0.000	0.000
AAAD	0.000	0.000	0.000	0.000	0.748

AACON	0.000	0.000	0.000	0.000	0.680
AASI	0.000	0.000	0.000	0.000	0.510
MHBN	0.593	0.000	0.000	0.000	0.000
MHFP	0.830	0.000	0.000	0.000	0.000

THETA

	C1	C2	C3	K1	K5
C1	0.593				
C2	0.000	0.221			
C3	0.000	0.000	0.353		
K1	0.000	0.000	0.000	0.632	
K5	0.000	0.000	0.000	0.000	0.666
K6	0.000	0.000	0.000	0.000	0.000
K12	0.000	0.000	0.000	0.000	0.000
K13	0.000	0.000	0.000	0.000	0.000
K15	0.000	0.000	0.000	0.000	0.000
K16	0.000	0.000	0.000	0.000	0.000
K17	0.000	0.000	0.000	0.000	0.000
K39	0.000	0.000	0.000	0.000	0.000
AAAD	0.000	0.000	0.000	0.000	0.000
AACON	0.000	0.000	0.000	0.000	0.000
AASI	0.000	0.000	0.000	0.000	0.000
MHBN	0.000	0.000	0.000	0.000	0.000
MHFP	0.000	0.000	0.000	0.000	0.000

THETA

	K6	K12	K13	K15	K16
K6	0.506				
K12	0.000	0.796			
K13	0.000	0.000	0.707		
K15	0.000	0.000	0.000	0.660	
K16	0.000	0.000	0.000	0.000	0.576
K17	0.000	0.000	0.000	0.000	0.000
K39	0.000	0.000	0.000	0.000	0.000
AAAD	0.000	0.000	0.000	0.000	0.000
AACON	0.000	0.000	0.000	0.000	0.000
AASI	0.000	0.000	0.000	0.000	0.000
MHBN	0.000	0.000	0.000	0.000	0.000
MHFP	0.000	0.000	0.000	0.000	0.000

THETA

	K17	K39	AAAD	AACON	AASI
K17	0.710				
K39	0.000	0.591			
AAAD	0.000	0.000	0.441		
AACON	0.000	0.000	0.000	0.537	
AASI	0.000	0.000	0.000	0.000	0.740
MHBN	0.000	0.000	0.000	0.000	0.000
MHFP	0.000	0.000	0.000	0.000	0.000

THETA

	MHBN	MHFP
MHBN	0.649	
MHFP	0.000	0.311

ALPHA

MATHARD	POSPAR	PARMH	SOCSUP	ACAD
0.000	0.000	0.000	0.000	0.000

BETA

	MATHARD	POSPAR	PARMH	SOCSUP	ACAD
MATHARD	0.000	0.000	0.000	0.000	0.000
POSPAR	0.003	0.000	0.000	0.000	0.000
PARMH	0.544	0.000	0.000	0.000	0.000
SOCSUP	-0.178	0.000	0.000	0.000	0.000
ACAD	-0.014	0.115	-0.301	0.051	0.000

PSI

	MATHARD	POSPAR	PARMH	SOCSUP	ACAD
MATHARD	1.000				
POSPAR	0.000	1.000			
PARMH	0.000	-0.082	0.704		
SOCSUP	0.000	0.076	-0.130	0.968	
ACAD	0.000	0.000	0.000	0.000	0.877

TECHNICAL 9 OUTPUT

Error messages for each replication (if any)

Beginning Time: 10:17:13
Ending Time: 10:17:54
Elapsed Time: 00:00:41

MUTHEN & MUTHEN
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Los Angeles, CA 90066

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Appendix D

VIRGINIA TECH

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http://www.research.vt.edu/sirc/hrpp

MEMORANDUM

DATE: May 12, 2019

TO: Joyce A Arditti, Amy Alida Audrey Morgan

FROM: Virginia Tech Institutional Review Board (FWA00000572, expires January 29, 2021)

PROTOCOL TITLE: The mediating effects of family resilience processes in the context of paternal incarceration: A structural-equation analysis of the Family Inequality Framework among Danish families with school-aged youth

IRB NUMBER: **19-346**

The Virginia Tech Institution Review Board (IRB), acknowledges the Amendment request for the above-mentioned research protocol.

This acknowledgement recognizes the item(s) identified in the Special Instructions section.

NOTE: Amendments that must be submitted to WIRB for review and approval include changes to funding, conflict of interest, ANY and ALL changes to study procedures and study documents. If your study received a Determination letter (qualified for Not Human Subjects or for an Exemption) please review the information at the end of your Determination Letter. If your study was approved by a Panel, WIRB provides guidance on making changes in their Guide for Researchers. Please refer to the section titled, Changes to Research / Additional Document Submissions in the following document:

https://secure.research.vt.edu/external/irb/wirb-guide-for-researchers.pdf